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PLANS

FOR THE ESTABLISHMENT
AND OPERATION OF THE

NATIONAL LABORATORY *for* INVENTION AND RESEARCH

A Study of our National Inventive and Industrial
Requirements with a Practical Solution

AN OUTLINE OF PLANS

FOR THE ESTABLISHMENT
AND OPERATION OF THE

NATIONAL LABORATORY FOR INVENTION AND RESEARCH

BY THE

NATIONAL INSTITUTE OF INVENTORS

NEW YORK CITY

Prepared, Compiled and
Copyrighted, 1918
by
Ernest Gilmore Gardner.

*Embodying the Necessity, Scope, Organization, Administration
and Comments of America's Foremost Men, Endorsing
in Principle such a Philanthropic Institution*

FOREWORD

WHAT WILL THE FUTURE HOLD FORTH?

Ray Long, editor of "The Red Book," in an editorial statement very aptly and concisely dwells upon the marvelous and wondrous advances made in invention:

"We of this generation consider ourselves pretty broad-minded, but our great-grandchildren will think of us as narrow, unimaginative mossbacks. They will have the same sort of opinion of our outlook that we have of our great-grandfathers'.

"It seems utterly ridiculous to us that anyone should have scoffed at Morse because he believed in the telegraph, or should have called the first steamboat 'Fulton's Folly,' as our great-grandfathers did. Yet only twenty years ago we were poking fun at the airplane as 'Langley's Folly.'

"Our great-grandfathers would not have believed that in 1918 we would talk by long-distance telephone from New York to San-Francisco or that ships at sea would communicate with each other and with land by wireless. We refuse to believe that by our great-grandchildren's time it will be possible to communicate with Mars.

"We can't realize that the time is near when one may encircle the world in a few days in a trans-continental airship or cross this continent in a very few hours in trains arranged like thermos bottles to keep out dust and cold and heat; but neither could our great-grandfathers believe that we would travel from New York to Chicago in 'steam cars,' as they called them, in twenty hours, or from New York to San Francisco in four days, and have not only a private bedroom at our disposal, but a dining-room, bath, sun-parlor, barber, valet and business secretary as well.

"What would you have said twenty years ago if some friend had told you that by 1917 submarine warships would draw the United States into a war in which the whole world was involved and that one of the weapons expected from us by our European and Asiatic allies would be a fleet of twenty-five thousand airplanes?

"Could your imagination, even ten years ago, have accepted that in 1918 battles would be staged five miles in the air and that giant guns—manned by gunners directed by aviators in 'planes equipped with wireless—would smash targets ten miles away, which the gunners could not see?

"Professor Loeb and other scientists already have taken important steps toward the discovery of the secret of life, but we can't comprehend even now that by the time our great-grandchildren doctors may know how to create life and keep the human machinery going after it has run down.

"Neither would our great-grandparents have believed that by now physicians would cure 'rheumatics' by treating the teeth or removing the tonsils, that they would transplant nerves, bones and blood-vessels, make new jaws for wounded soldiers and conquer the terrible and fatal 'inflammation of the bowels' by removing the appendix.

"It may seem farfetched to us, but it should be perfectly true that by the year 2000 disease will have been banished from the earth. Such a boon is no more impossible than was the idea, a hundred years ago, that by now we would have driven smallpox, yellow fever, bubonic plague and typhoid from intelligent communities, and that the medical men of our time would find means to prevent lock-jaw and blood poisoning.

"Impossibilities have become accepted realities with such amazing regularity since our great-grandfathers' time that it is a brave man who would dare to predict anything in human desire would be impossible by our great-grandchildren's day.

"The best we can say is that we are living in the most wonderful period of history so far. We can't live to see the next century, but we can determine to live just as long in this one as possible."

A patron of invention of today can have hardly any conception of what the future may bring forth in the way of furthering human progress.

In the following pages are outlined plans, which if carried out, will help make the future still more wonderful.

The Peace Problem Confronting America

A war not of our choice was forced upon us. A peace of our own choosing will sooner or later be forced upon the common enemy.

It is true while we are at war, we must utilize every energy to win that war, but we must not neglect to prepare for commercial activity after peace has been declared.

This country has attained its highest point in commercial supremacy, supplanting in neutral countries many of those countries now at war. Whether America will continue to maintain its superb commercial position, and even develop greater commercial activity, depends largely upon what plans and steps are taken at this time.

The Development of Invention and its Relation to Industry—

We must consider many phases of commerce after the war:

To maintain and enlarge our commercial position in neutral countries.

To strengthen and increase our trade in allied countries.

To increase and firmly establish our trade even in those countries with which we are now at war.

To increase and maintain home trade against foreign competition.

This war may last three months, or three years, or even longer, but preparation must be made for the day when peace arrives and economic conditions adjust themselves. America will, undoubtedly, by that time, have the largest merchant marine in the world and we must be ready to see that American ships have the necessary commercial commodities to compete in any market of the world against any similar commodities regardless of what nation produces them.

It all resolves itself down to two factors:

The economic production of raw material or its procural.
The economic manufacture of such raw material.

America is rapidly reaching the point, or may even have passed the point, where it is no longer solely a producing nation, but where its manufactured products exceed its own consumption or its production of raw material.

When the time arrives that a nation produces and manufactures more than it consumes, then it must depend upon foreign trade to use its surplus, thereby providing labor for the sustenance of its people.

Competition Will Be Keen—

This means competition with every other country in the world:

Competition with foreign labor.
Competition with foreign raw material.
Competition with foreign machinery.
Competition with foreign manufacturing processes.
Competition with foreign shipping.
Competition with foreign banking.

Outside of banking, the entire proposition of competition depends upon two factors:

Invention and Manufacturing Processes.

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Through Invention new machines may be devised which will render American manufacturers above fear of foreign competition with mechanism, labor or production of raw material, while new and superior manufacturing processes will render them impregnable against anything that may be accomplished abroad.

The realization of these facts has dawned upon the enemy, and Germany through its syndicates, has evolved a method whereby all invention and research work shall be mobilized through a common organization to the end that German manufacturers may be able to secure the very best that is possible out of German inventive and research genius.

Great Britain Plans on an Enormous Scale—

Our own Allies, France and Italy, while one with us in the common purpose of martial victory, are planning along similar lines. Consul General R. P. Skinner, in a report dated London, January 26, 1918 and printed in the Daily Consular and Trade Report, issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce, under date of March 6, 1918, describes how the British Ministry of Reconstruction has just published a list of various commissions and committees which are being set up for the purpose of developing trade after the war.

Under what he terms "Group VI," a Scientific and Industrial Research Committee, with two Research Boards, five Standing Committees, seven Research Committees, four Inquiry Committees, and three Provisional Organization Committees, has been established for the purpose of considering how best promote industrial development for Great Britain when peace arrives.

Every phase for the development of trade, the commercial and industrial policy of the Empire, as well as the financial aspect, are to be worked out. They even propose to increase the production of raw material within the realms of the British Empire, all to the end that British manufacturers may have a plentiful supply of cheap, raw material with which they can compete with other countries of the world in the manufactured product.

Similar work is being carried out in every part of the British Empire—Canada, has its council, South Africa, India, Australia, and the Island Possessions are rapidly falling into line with this industrial development policy of the British Empire.

The British Board of Trade Journal, under date of September 6, 1917, reports the Imperial Trust for the Encouragement of Scientific and Industrial Research has a fund of $4,866,500 with which it intends to develop research work and industrial processes in the effort to control the world's trade for the benefit of our British Ally.

It is proposed that this money be spent in the form of grants in aid of research work undertaken by firms in any industry which may combine to conduct it on a co-operative basis, and recommends the establishment of associations for research limited by guaranty and trading without profit.

For example, cotton which is one of our largest products is to be considered by one form of research from the cotton plant itself "to the finishing of the manufactured article." The scheme of procedure has been worked out in considerable detail and it is proposed that this association will include as members, cotton spinning, doubling, thread making firms, cloth, lace, hosiery manufacturers, bleachers, buyers, printers, and finishers, and a special committee is considering a method to increase the production of cotton grown in India.

This movement is of vital importance to our own cotton producers as well as cotton products manufacturers.

A "National Physical Laboratory" has been formed and various firms are to unite and through this laboratory carry on their work of research and trade development.

Whether our Allies will carry out the co-operative movement among their industries to the same extent that Germany proposes, is not known at this time, but Germany has gone so far as to organize a "Zentral Einkaufs-Gesellschaft," or a "Central Purchasing Agency," through which it is proposed to purchase for all German manufacturers such raw materials as Germany requires from the rest of the world.

With these formidable alignments of competing foreign manufacturers in their aim at controlling the world's commerce, what is America doing?

Up to the present time the bulk of our progress in invention has been done in an indifferent and scattered manner.

Invention and Research Not Efficiently Directed—

An inventor conceives an idea and proceeds to carry it out to the best of his ability. If he has money he is able to find some private experimental shop to develop the idea. If he is without means, he works out the development of his idea in a slow, painstaking manner due to his limited facilities. He may reach the point where he is able to take out a patent and then his patent claims may be presented in an indifferent manner and even if granted, a patent may not protect him but lead to endless litigation thereafter.

If his invention is practical and a good one, he then seeks some manufacturer to develop it and the invention begins a series of vicissitudes, before it finally achieves the success it deserves. Little encouragement is given the inventor—he sometimes is looked upon as a crank and visionary, yet, the submarine was a dream of a visionary, the aeroplane was the idea of a man considered flighty, while the same may be said of hundreds of inventions which are today part and parcel of our daily lives. The dream of today is the reality of tomorrow and who knows the limits of the inventive genius of America?

Heretofore the creation of manufacturing processes has been carried on in a desultory manner and it is only of late years that many manufacturers in same lines have realized the necessity of co-operative research and development.

But, where a manufacturer or a number of manufacturers have worked out new processes, the research work has been the result of one or two or a few men's brains.

How much better it could be if there were some centralized organization through which there could be a concentration of inventive and industrial research ideas, an organization that would be in direct touch with every other research or experimental agency in the United States. Thus the work of one agent would be supplemented by the efforts of every other agent and the common single ideal to be sought would be the common good of America.

In the Patent Office there have been recorded about one and a half million patents of which nearly three-fourths have never been utilized or have no practical value.

This is due to two reasons:

Either the inventor had developed an idea which had no commercial or utilitarian purpose, or the invention was such that it was considered essential by someone to stifle the inventor's genius and bury his invention, either through purchase and withholding it from common use, or surrounding it with all sorts of infringements and legal opposition or laying dormant because of no money to develop it, so that the inventor became discouraged.

It seems a pity that American inventive genius should be wasted in developing an idea that is neither useful nor has any commercial advantage.

Would it not be better if some method could be found to direct America's inventive genius along utilitarian lines and discourage the creation of impractical and impossible ideas, and encourage those conforming to natural laws.

America's problem is how to mobilize and guide its inventive and research genius so that it may create, develop, and exploit inventions and processes to the end that America may maintain her present supremacy and reach greater trade development than heretofore, regardless of whether or not this inventive genius has the financial means to carry out its ideals.

The Need of the Day

For the Expansion of its Commercial Supremacy at Home and Abroad America needs a Central Organization for the Development of its Inventions and Industrial Research.

What Germany has done, what France, Italy and England are doing, America must do. Whether this is a Governmental function or a private enterprise, must depend upon the conclusion whether our Government is paternal and whether its republican and individualistic form will permit it to appropriate funds for the purpose of financially benefitting individuals or corporations.

Those who study deeply the problem will arrive at the belief that it is a function for private enterprise, if the very best results are to be secured, for while Governmental agencies may develop abstract forms of research the development of concrete research and invention must remain a private function if the highest ideals are to be successfully maintained. *A philanthropic institution, established by the endowments of those who feel they would like to increase the greatness of our country, through a personal expression of their support and loyalty will find a splendid outlet in the establishment and support of*

The National Laboratory for Invention and Research.

It is not the intention of such a National Laboratory to supplant or conflict with any established research or experimental agency, but rather to augment their work.

This institution will be philanthropic in character, to foster, aid and develop the idea and perfect the invention regardless of whether the inventor be rich or poor.

The facilities of the Laboratory would be at the disposal of any and all inventors, whether they be rich or poor, provided, the Board of Survey and Recommendation has passed upon the practicability of the invention. If they be poor the Laboratory ought to be willing to join with such inventor to develop the invention and look for a return on its investment after the invention has been perfected. It might even aid a poor inventor to find a market for his invention, and the reports of tests of the Laboratory would certainly be considered a basis of valuation as well as establishing a standard of merit.

To carry out this program it would be necessary to found an endowed institution, with a complete modern Research Laboratory, Machine Shops, Research and Patent Library, etc., with a suitable corps of engineers, chemists, and mechanics in charge, under whose direction the work of the necessary bureaus would be carried on.

The control and general direction should be vested in the inventors, engineers, financiers and manufacturers of the country, so broad in its character that there could be no question of their philanthropic interest.

The Aim To Make America First.

To help America win the war.

- **To help** America, through invention, maintain supremacy in the commercial markets of the world after the war.
- **To help** inventors develop their ideas and direct them along practical lines, discouraging needless and impracticable inventions.
- **To help** manufacturers develop more economical processes and thus permit industry to maintain supremacy in manufacture.
- **To help** American manufacturers save waste in duplication of research work through maintaining a bureau of research records, permitting them to profit through and avoid the mistakes of others.
- **To maintain** a library of research reports and patent data for intelligent and easy consultation.
- **To help** Inventors to make their claims so broad that they will receive full reward for their labors and be protected within their rights.
- **To standardize** invention and processes so that manufacturers may have an institution to which they can turn for improvement as well as investment with least possibility of loss, its tests setting a standard for America.

The necessity for some such institution is corroborated in a report of the "Research Corporation" which was founded for the purpose of working along similar lines but of a commercial character, in that this corporation made a business of manufacturing and utilizing certain inventions which were unselfishly assigned to it free of charge by Dr. F. G. Cottrell, the inventor of the "Cottrell Process of Precipitation."

This "Research Corporation" which takes over and commercially exploits inventions on its own account is very limited in its workings and its finances, which are practically those of its profits plus a capital stock of $20,000.

In a report under date of 1917, it says "there is an opportunity and a need for an organization which can act as the intermediary between the inventor and the manufacturer, which can subject alleged discoveries or inventions to practical tests and render a judicial opinion to the manufacturer which can be accepted as trustworthy. There can be no doubt that a body able and willing to render this service in such a manner as to deserve the confidence of both inventor and manufacturer will render a public service of the greatest value."

Such an Institution as the proposed National Laboratory for Invention and Research would be to invention and research, and the industrial arts what the Rockefeller, Carnegie, Sage foundations and Mellen Institute are seeking to do for the sciences generally, for medicine and for the improvement of social conditions.

Regarding our foreign trade, in an article in the May, 1918, issue of "The Nation's Business," Dr. F. W. Taussig, Chairman of the United States Tariff Commission, in discussing foreign trade and how it will promote our prosperity says it depends on "whether we produce cheaply and effectively and exchange to advantage our goods for those of other countries. He furthermore says, "but in any case it is the effectiveness of our industrial powers in producing a thing which is cheap in comparison with its qualities that underlies all prospects of foreign trade (and he might have added home trade). The very existence and maintenance of exports rest on this basis of trade promotion, all banking and transportation facilities, all trade agents and embassies, all the agitation, all the patriotic devotion, avail nothing if this fundamental factor be lacking."

"I refer to the cumulative influence of all the factors which combine to bring about the final production and final putting on the market of the exported commodities. The factors are many and diverse; not only individual efficiency of the men, but the ingenuity on the part of inventors and engineers in perfecting machinery."

Such an Institution Needed, Says Dr. H. F. Hillebrand—

William F. Hillebrand, Ph. D., Chief Chemist of the Bureau of Standards, Washington, D. C., in an address published by "Columbia University Press," 1917, deals very lengthily with the subject "Our Analytical Chemistry and Its Future."

After giving his conclusions and analyzing the varying results and methods of the various lines of work of research agencies, he says "these and other considerations lead to the conclusion that such work should be in the hands of a permanently constituted body of well-salaried men under a director of the very highest ability as an analysist and of excellent tact and judgment. These men should be appointed only with the expectation that they are entering upon their life-work. It should be the intention to retain at all reasonable cost the services of those who prove thoroughly acceptable. Acceptability includes, of course, not only analytical skill, but also diligence, absolute honesty, and the highest conception of the dignity of this work."

"Furthermore, and this is very important, the institution should not act independently of the many industries, which it is established to aid, but should tactfully maintain the closest and most sympathetic relations with them all, inviting, indeed, co-operation of the most intimate nature. Such co-operation would be very valuable often times in exposing difficulties and thus indicating the directions which research in the central laboratory should take. It should include occasional visits to and from the laboratories of one side and the other for consultation and the actual carrying out of analytical operations, whereby misunderstandings may be sometimes cleared up and causes of differences ascertained more readily than by any amount of correspondence."

In this opinion of Dr. Hillebrand, the National Institute of Inventors heartily concurs and along this line of centralized organization co-operating with all research and experimental agencies in the country it is intended the National Laboratory should work.

Dr. W. R. Whitney of the Research Laboratory of the General Electric Company, Schenectady, New York, who is also a member of The National Institute of Inventors, has had a wonderful opportunity to study inventive and research development and who states in a letter that "for twenty years he has realized that there should have been some sort of a National institution (Laboratory) along the lines laid out." He says, "an organization like your Institute can afford to plan for the future, even for the time when its founders have passed away. Thus an organization by having a consistent policy can do something which no member can live to do. We need higher scientific education in our universities. We need to get at the supply at its source if we would influence the quality. This means to me public or federal support of scientific and engineering schools of the highest quality where men actually learn the infinite possibilities always due to careful investigation of nature's materials and laws."

It might be possible to fill books with concrete illustrations of how progress could have been advanced much earlier had there been some such institution to forward the inventive genius of America and when the word "inventive genius" is used it is meant invention, work of research and discovery in science.

To sum up, Mr. William Francis Hillebrand, Ph.D., Chief Chemist of the Bureau of Standards, Washington, D. C., in the very same monograph published by the "Columbia University Press" and which was mentioned heretofore, regarding the possibility of a National Chemical Research Laboratory, and which remarks will apply equally as well to a combined Laboratory for Invention and Research, says:

"What is the likelihood of such an establishment ever becoming a realization? To this no answer is immediately at hand. Certainly nothing will come of the proposal if it does not meet with the approval of the best judgment among chemists, (inventors and industrialists he might have added), and then still nothing unless a popular sentiment in its favor is awakened, nourished and made to grow by persistent discussion. The needed impulse and the demand created, the rest should not be so difficult now that we are awakening to the importance of chemistry to the life of the nation. The interests of the great chemical industries, or of industries at whose foundations chemistry lies, could surely be depended upon to create, through endowment or influence upon Congress, an institute for analytical research which would be the first of its kind and which *would help to place this country in the very forefront of progress among nations.* The industries have received so much from pure science in the past without adequate return that the time seems ripe for them to contribute generously towards its further developments, especially along those lines which promise so much to themselves as those which I have indicated. *It might even be that some private benefactor would arise to do for chemistry what has been so magnificently done for astronomy, terrestrial physics, biology, and the study of the causes and prevention of disease. Given a properly prepared field I do not feel that I am over-optimistic, considering the wave of interest in matters pertaining to chemistry that is sweeping over the country. The preparation of the field should be intrusted to a carefully selected and energetic committee."*

"I have already intimated that, whatever plan might be adopted, the closest co-operation should be sought and maintained with the industries. *Indeed, an advisory board of outsiders should be selected to assist the director in the planning and administration of the scientific work, and the connection of this board with the affairs of the institution should be very real and not nominal.* The laboratory itself should be, however, in no way debarred from taking the initiative without reference to the Board proposed. Indeed, the laboratory force would often be in far better position to know or learn the weak points in current procedure than any advisory body."

"Here let me interject parenthetically a word on a subject that has been far too much neglected by chemists in the past. It seems that now is the time when they should bring pressure to bear to secure that share of official as well as private recognition which is their right by reason of the immense importance of their work to the general welfare. The relative ease with which hundreds of millions of dollars are obtained for military purposes offers a startling contrast to the almost complete indifference of the great scientific interests of the country to Government aid to science. Without raising controversy over the relative value of military and scientific preparedness it is certainly true that if the scientific societies presented their case for Government aid to science with a fraction of the efficiency with which the case for national defense has been prepared, there is scarcely any ideal for such an institution that could not be promptly realized. It is time that chemists entered the field far more than they have done to show how they can contribute to the general welfare and what they need in the way of countenance and support."

"It would be going too far afield at this early stage to propose even tentative details for the organization and conduct of the proposed establishment, which some of you will perhaps recognize as patterned in its objects and scope somewhat after the international institute for chemistry that Professor Wilhelm Ostwald advocated in great detail a few years ago. Ostwald had in mind an institute of international scope to cover the whole vast domain of chemistry. I propose one of more restricted and only of national scope. What might grow out of a well-established and successful organization in the United States with respect to international co-operation may be left for the future to determine. World-wide co-operation from the start would be ideal, but even under normal conditions the task would be herculean, as it is at present impossible of accomplishment. Let us therefore proceed with only our own immediate needs in view, in the certainty that if our initiative succeeds others will copy and that when the time is ripe we may expect to lead in bringing about the broad world co-operation that must eventually come."

In regard to whether such a National institution should be financed and supported by the Government or by private endowments of those philanthropically inclined and who have intense patriotic interest in the welfare and progress of our country, there may be quoted another section of the very same valuable monograph prepared by this well-informed gentleman.

"In favor of independent endowment is the greater stability in a certain sense of an institution so supported and a greater freedom of action and choice of men, offset in a measure by its lower prestige. This latter weakness might hold more during the earlier years of its existence, for under proper guidance there would seem to be no reason why it should not in time merit and obtain much, if not all, that now attaches to institutions fostered by the Government. The greater stability alluded to lies, however, rather in a surer continuity of existence than in certainty that the institution will be able always to fulfill its functions in full measure.

"There is this to be said further in favor of indepepndent endowment and control, that if the conutrol were in the hands of the technical organizations most concerned chemists would come to regard the institution as more peculiarly their own child, in the growth and performance of which each might take pride but for whose conduct they themselves alone wouuld be responsible. Certainly the time is ripe for chemists to be represented by a national institution which should serve for fundamental work of interest to all chemists the same function that private and industrial laboratories serve for their clients."

The Functions of a National Laboratory

To Co-operate with Research and Experimental Agencies—

This National Laboratory, philanthropic in character, would naturally become a clearing house as well as treasure house of inventive and research ideas. Through co-operation with other research agencies, various problems with all attendant data thereon, could be refered to other philanthropic, collegiate, or private research or experimental agencies, and the National Laboratory apportion to such agencies, the necessary funds to recompense them for the expense they may have been under while developing ideas submitted to them.

Through an exchange of ideas and data, a very valuable fund of research information may be gathered and great economy effected through the avoidance of duplication. The National Laboratory would open its records to the manufacturers and scientists of the nation, but to those of America only.

This same procedure may be followed in connection with metallurgical laboratories and experimental machine shops throughout the country.

Where an inventor submits an idea and after it has been approved by the Board of Survey and Recommendation, the National Laboratory would collaborate with the inventor in preparing his plans, and if he lives in a distant part of the country send them to a nearby experimental machine shop, to which the inventor is referred, in order that he may give supervision to the construction of models of the proposed invention, subject to the financial limit which the Board of Finance may place upon the development of the invention.

This procedure would save the equipment of the National Laboratory as well as enlarge its facilities to the extent of those of the nation, in fact, combining all agencies for the common good both public as well as private industry.

As much as possible the National Laboratory would work through reputable patent attorneys, and use its own records and its Patent Bureau merely to see that inventors collaborating with the National Laboratory secured the best and broadest claims possible, in order that the Laboratory's interest be protected as well as the inventor's.

Thus the National Laboratory for Invention and Research would work with and augment all existing agencies which might affect the securing of a patent and the development of the invention and would not aim to displace the work of any agency whatever.

To Aid Inventors' Financially—

Many times an inventor has developed his idea up to a certain point and is compelled to stop owing to lack of funds. When approved as meritorious by the various Boards, the National Laboratory would either take over the perfecting of the invention or advance funds for its completion, the National Laboratory being protected within its rights.

To Develop Inventors' Ideas—

Where an inventor offers an idea to the National Laboratory and the Board of Survey and Recommendation has passed upon its merits and approved the development, plans would be prepared and experimental work carried out consistent with good engineering practice. When the invention has been perfected and tests proved its value, the seal of approval of the National Laboratory would be placed upon the invention, which would aid the inventor in securing capital for its commercial utilization.

The Laboratory's Interest in a Developed Invention—

Where the National Laboratory developed an inventor's idea or aided him financially, it would make an arrangement whereby it would receive a small interest in such invention, not with the idea of making a great profit, but to secure compensation for funds advanced and at the same time to help maintain the National Laboratory and create a larger fund in order that it may aid other inventors who come after.

Thus the National Laboratory would in a short time, become self-sustaining and broader in its scope. It is not expected that the interest of the Laboratory would be very large, where it supplied the funds necessary, but would be consistent with good business practice.

To Develop Ideas for Paying Inventors—

When an inventor chooses to use the equipment of the National Laboratory and which involves expense, or loss through wear and tear, and such inventor is financially able to pay therefor, he applies to the Bureau for Commercial Development and they, upon learning the importance of the invention and the time and equipment required, would issue a permit for the use of the Laboratory's equipment and the paying inventor would be charged a small fee.

It is not the intention, however, that paying inventors should monopolize the equipment to the detriment of those who are unable to pay, for such a man may use private experimental shops for the development and the Laboratory for reference only.

This same method might apply to the manufacturer who desired to have his employees use the equipment for his benefit and private personal gain.

Where manufacturers, able to pay, wish to have the employees of the Laboratory develop some process or machinery for their benefit, the terms of payment for such service would be determined by the Bureau for Commercial Development. They, too, would be given the use of the reference Laboratory or part of the Laboratory and part of the work could be performed outside in some allied experimental or research establishment, if the facilities of the Laboratory did not permit.

This use of the facilities of the National Laboratory by inventors who pay therefor, is where the inventor or manufacturer proposes to work out some private and confidential process of his own. However, if the manufacturer desired the National Laboratory to work out for him some process or invention, and the Laboratory called upon the inventors and research agencies of the country to solve the problem, such processes or inventions, of course, would be the property of the inventor or research agency, coupled with the Laboratory's interest, and the manufacturer would arrange for remuneration for the use of such process if he used it for his own private purposes.

Of course, this particular feature of the use of the Laboratory's facilities would be subject to many conditions as the occasion may require, to develop better and more economic methods.

Where some foreign manufacturer has a process or invention that prevents American competition, to overcome which an American maufacturer applies to the National Laboratory, giving the proper assurance that no foreign manufacturer or agent thereof is to profit, the Laboratory through its own resources and those of its allied agencies proceeds to work out a better and cheaper process or invent a superior machine or whatever it may be.

With all the resources of the country at work along well defined and intelligent lines, without duplication of effort, it must be but a short time before the desired process or invention is secured.

It is proposed to issue a bulletin periodically wherein would be announced desired processes and machines and those interested in the procural thereof could secure details upon request of the work outlined, together with all known data upon the subject. Who knows from where the solution would come?

In this way invention and research would be guided along practical and desirable lines.

It ofttimes happens that an inventor has an invention which in itself may be of value, yet small and not of sufficient importance to require development by the Laboratory. In this case the idea or invention may be registered at the Laboratory and it may be referred to a number of manufacturers who would be commercially interested in its manufacture and they develop the invention to its fullest commercial possibilities. In this way the Laboratory may work with manufacturers in the development of smaller inventions withal aiding the inventor.

To Save Wasted Effort and Dissuade Undesirable Inventions—

With a National Laboratory like this at hand, an inventor may learn in advance whether there was any practical use for his invention, or idea and whether there would be a possible market, and whether it had ever been conceived before. He would thus receive suggestions that would save much time and prevent him from working in unprofitable directions, for which a nominal fee will be required.

This, too, would help avoid littering up the Patent Office with a lot of useless ideas which would never be of value, while a counter-suggestion to the inventor might set his ingenuity to work in a profitable manner and save him needless expense, as well as patent fees on an idea which would never bring him any return. Perpetual motion schemes would soon become a thing of the past.

To Certify Tests of Inventions or Processes—

Today the average inventor is in a position where he is compelled to spend great sums of money to develop his invention or work out his process, or wander aimlessly until he finds some manufacturer or financial man willing to "to take a chance." A Laboratory of this kind would take the "gamble" out of invention, for if the Board of Survey and Recommendation had approved of an idea, and the National Laboratory had developed it, and the Bureau of Tests and Standards had officially passed upon the complete invention and made its report, there would be no room for guess work. The manufacturer who might use the invention or process would know exactly what he could expect, while the inventor would know the basis of valuation of his invention and investors throughout the country could feel safe, after the Bureau of Tests and Standards had approved of the invention or processes. Thus there would be no doubt as to whether it was successful or not and many fraudulent promotion schemes kept out of the field of invention.

Soon the Bureau of Tests and Standards of the National Laboratory would be looked upon as an official place where a standard of merit would be placed upon any invention whatever and its seal of approval would be equivalent to saying whether the invention was good or bad.

Thus even inventors who had perfected their inventions outside of the National Laboratory would naturally turn to the Bureau of Tests and Standards in order that an unprejudiced and unbiased opinion might be secured beyond which there could be no cavil.

In this manner would invention be standardized, and placed upon a firm foundation, and not a football in the path of progress.

Consultation and Certification of Invention—

Where an inventor believes he has a good idea, he is not always sure but what the same idea has been produced before, nor is he altogether certain it may not infringe upon somebody else's invention.

With a proper Bureau, it would be possible for him, by simply making a request of the Laboratory to have the entire data regarding such an invention given him upon short notice. A small fee can be charged to cover the expense of the clerical work.

It also may be possible for an inventor to present his idea or invention to this Bureau and have it certified to as being his idea or invention of that date and, maybe have a test made, if perfected, in which case he could feel a certain degree of safety in presenting his idea or invention to anyone in the attempt to market it. The record of the certification by the Laboratory would be accepted by a court, as showing the inventor had originated the proposition on that date in case anyone tried to deprive the inventor of his reward through using his idea without compensation to him.

Bureau of Commercial Research—

Today when an American manufacturer desires to take up a new process, or develop a new machine, or even consider his own machinery, he is working in the dark.

It may be possible that in some other country the very thing he is looking for has been developed and has never been brought to his attention and in all probability never would come under his notice until he found that his product came in direct competition either at home or abroad with the product resultant of a better machine or process used by his foreign competitor.

While the National Laboratory for Invention and Research would be devoted principally to actual and practical development for commercial purposes, it would find a great service performed to the industries of the nation were it to keep a close watch upon every form of mechanism or process used in other countries and through a complete record of all data relating to such machinery or processes, the American manufacturer would be in a position to learn in a brief period, every detail of manufacture used by his foreign competitors.

Thus the moment a new process or machine was brought out abroad, complete data would be sent to the National Laboratory where it would become part of its records for the use of American industry.

If a process was one of vital basic importance and it would be of value to America to have it duplicated or a better process developed, a complete report and the known facts about such process could be distributed to the various research agencies through which the National Laboratory would work, as well as its own Laboratory, and the best brains of America set to work for the common good.

Primarily, the National Laboratory would be for the purpose of developing America's commercial supremacy—to show American manufacturers how to make things better and cheaper at home than they can be made abroad as well as to show them how to manufacture more economically, in order that they may overcome any possible foreign competition, not only in our home markets, but in the markets of every other country in the world. The Bureau of Commercial Research would keep in touch with foreign inventions and processes, and in this way secure the necessary data with which to spur the inventive and research genius of America to greater efforts.

For instance, Argentina exported over thirty millions of dollars worth of linseed annually. But the flax from which linseed comes, when it is grown to seed, is valueless for cloth or fibre purposes, although it possesses a splendid fibre which would be valuable for coarse cloth, bags, cord, twine, etc. In the seedy state, the weedy stalk of the flax is so close to the fibre that no method is known at this time, by which this stalk may be separated from the fibre. Argentina, it is understood, has offered a reward for any invention which will perform this work.

An invention to accomplish this, would not only create a market for the machines in Argentina, but in our own great Northwest, Russia, and other parts of the world and practically bring about a new industry. Thus is commerce dependent upon invention.

Through learning the needs of the various countries of the world for invention as well as new and desirable processes for local use, this Bureau would develop new industries for American manufacturers. Practically, the Bureau of Commercial Research would resolve itself into a study of the inventive and manufacturing needs of our own and foreign countries to:

Study foreign secret processes with the idea of developing superior methods in America.

Study and gather all data incidental to foreign manufacture and processes for the use of our own manufacturers.

Study inventions now in our own Patent Office and those of other countries with an idea of developing those of commercial value which are laying dormant.

Study the Patent Laws of all countries of the world and maintain records for quick and intelligent perusal, as well as aiding in the standardization of Patent Laws of all countries.

Study the needs of American manufacturers and endeavor to supply their requirements in the way of invention and processes.

Tentative Plans

The Proposed Organization of the National Laboratory for Invention and Research.

Board of Governors—

It has been proposed to vest the practical control of the new organization in a Board of Governors which is to consist of one hundred or more, as may be determined, of the inventive and scientific men, engineers, and business men of the country, to serve for varying terms of three, five, and ten years.

They would meet periodically for the purpose of passing upon the acts of the Board of Directors and their report of their work. It would be their duty to choose the members of the Board of Directors each year. Their function would be that of general supervision.

Board of Directors—

This Board, consisting of ten or more men, as may be determined, would have active supervision of the management of the National Laboratory for Invention and Research under the direction of the Board of Governors. They would meet bi-monthly, or as they may determine. They would select an Executive Chairman who would see that their instructions were carried out.

Executive Chairman—

Under his jurisdiction would come the active management of the Laboratory. He would preside at the meetings of the Board of Directors, to whom he would be responsible, and would also be a member, Ex-Officio, of the Board of Finance, Board of Appeals, and Chairman of the Board of Survey and Recommendation, and his duties would be to carry out the instructions of the Board of Directors.

Board of Finance—

This committee would consist of practical business and financial men who would pass upon all appropriations for the development of inventions or researches which had previously been approved by the Board of Survey and Recommendation. A regular monthly budget system is recommended which would be under the jurisdiction of the Board of Finance, which would also control all investments, receipts, and expenditures and be responsible to the Board of Directors.

Board of Appeals—

This body would act in a judiciary capacity and pass upon any appeals from the decision of the Board of Survey and Recommendation.

Remuneration of Officials and Employees—

It shall be an undeviating rule of the National Laboratory that no official or employee shall profit in any invention or process in the least degree, other than through the regular salary or fee paid by the Laboratory for services rendered. Neither shall the Laboratory pay any dividends or profit on its investments and no funds paid out excepting for services or expenses and only for value received, so that every penny received by the Laboratory shall be used solely for the development of invention or processes according to the principle and plan for which the Laboratory shall be established except as hereinbefore provided. In other words, while the National Laboratory may give bonuses to spur on and reward the efforts of employees for consciencious work, the institution will not create inventions for its own account. However, the Board of Governors can regulate this phase to meet any requirements.

Board of Survey and Recommendation—

The actual work of developing invention and research would be done through the Bureaus devoted to certain particular classes of invention and research, the director of each Bureau would be a member of the Board of Survey and Recommendation.

Any invention referred to the Board of Survey and Recommendation by the director of a special Bureau would receive the consideration of the entire Board and if they approve of the experimentation and development of the invention or research, they would also recommend a limit on the expense involved and refer the matter to the Board of Finance to provide the necessary funds in the development of the invention.

This Board of Survey and Recommendation is the real Board of Control for any invention and if they disapprove of the development of any idea, their word is final excepting in certain cases where there is a substantial difference of opinion in the Board. An appeal may then be made to the Board of Appeals for their decision which shall be final. It is hardly conceivable that where a substantial majority of the Board of Survey and Recommendation disapproved the development of an idea, that an appeal would even be considered.

This Board would meet each week and would be responsible, as a body, to the Board of Directors, while the acts of the individual directors in the workings of their Bureaus would not only be responsible to the Board of Directors, but under the direction of the Executive Chairman as well.

Bureaus for Development—

Each invention would be developed by the Bureau under whose jurisdiction it would come because of its classification and each Bureau would be in charge of a capable engineer or director who, as stated before, was a member of the Board of Survey and Recommendation, and who would have the choosing of his assistants subject to the approval of the Executive Chairman and the financial limits of the Laboratory.

Proposed Bureaus—

In order that the work of the National Laboratory might be carried out with the maximum efficiency, it is proposed to create various Bureaus to handle various classes of inventions. For instance:

Commercial Research
War Inventions, Military and Naval
Aeronautics
Steel and Iron Industry
Automobiles and Vehicles
Electricity
Steam and Water Power
Printing Trades
Internal Combustion Engines
Agricultural Machinery
Chemicals and Drugs
Paints and Dyes
Manufacturing Processes
Mining and Metallurgy
Textiles and Fibres
Paper and Leather Products
Gases and Fuels
Tests and Standards
Library: Legal, Research and Patent
Experimental Machine Shops
Commercial Development
Foods and Preservatives
Glass, Pottery and Ceramics
Pneumatics
Optics and Illumination
Structural Materials
Economic and Safety Appliances

New Bureaus may be created as the necessity arose and the funds of the Laboratory permitted. Those listed are merely suggested and are subject to change if requirements warrant.

Bureau of Commercial Development—

This Bureau would have charge of making arrangements with manufacturers or paying inventors desiring to use the facilities of the Laboratory, i. e., as inventors, manufacturers, chemists, who prefer to develop their own ideas with the facilities the National Laboratory offered, without the National Laboratory having any interest in its development commercially or otherwise.

This Bureau would make the terms and prepare contracts with inventors who apply for aid in the development of their invention as well as see that the necessary financial arrangements were made with the allied research and experimental agencies working in conjunction with the National Laboratory.

A great feature of this Bureau would be the development of a department to find a market among manufacturers or investors for such inventions that were successfully perfected and which had been approved by the Bureau of Tests and Standards.

Library of Patents, Law and Data—

This department would be in charge of a capable man with thorough patent experience who would compile all patent data possible of foreign countries as well as our own, the records of the Laboratory and those of all research experimental agencies of this and foreign countries as well as any records or data which may be of value in connection with invention, research, or patents.

How the Laboratory would work—

We will take up the case of an inventor without financial means to develop his ideas. He applies to the Laboratory for aid making brief statement of what he proposes to do and if his idea was a chimera, he would be advised to try along more practical lines, but if there seemed to be a germ of value, he would receive a form on which he would be requested to state in detail his proposed plans in duplicate, which together with any drawings he would be expected to furnish to which he would attach an affidavit in duplicate, made out before a Notary Public wherein he swore that it was his original idea and that he had not copied it from anything else and that he was the sole originator, or if he was working in conjunction with some other inventor, they both signed the affidavit.

When this reached the Laboratory it received the Official stamp of the Laboratory and the copy would be mailed back to the inventor which would be his certification to show that the Laboratory had received his suggestion, and attested same.

All the signed papers then would go to the director of the Bureau under whose jurisdiction the invention would come and if the plans were worthy of consideration and there was any value in their development, he would attach his recommendation to them, and the matter would be referred to the Board of Survey and Recommendation for consideration at its weekly meeting. If there should not be sufficient funds on hand or there was a maximum of development work under way, this might be held over for a later time.

Thus every idea that came to the Laboratory would first have to pass and receive the approval of the director of the Bureau to which it was referred as well as the approval of the Board of Survey and Recommendation. If the idea was of no practical value or of commercial merit, it would be referred back to the inventor, possibly with a recommendation or suggestion, with the information that it would be useless to proceed with its development or give the reason for refusal.

If, however, the idea had sufficient merit to warrant a substantial majority of opinion in the Board of Survey and Recommendation, either the inventor or the Board might refer the matter to the Board of Appeals for final decision. It might be wise for the Board of Survey and Recommendation in such an instance to refer it automatically to the Board of Appeals and thus save a lot of correspondence and discussion with the inventor, who, when he realized that every effort had been used to determine the value of his invention would discontinue his efforts to have the Laboratory develop his idea. If, however, he still believed in his idea,there would be nothing to prevent him from carrying it out on his own account, but the bulk of all inventors when they found the reasons why the National Laboratory declined to develop the invention would generally drop further work on it.

If, however, the director of a Bureau and the Board of Survey and Recommendation approved of an idea and there were sufficient funds on hand to carry it out, they would indicate the extent to which they were prepared to have the Bureau develop the invention and the work would go on.

It may be that the inventor himself would be valuable in working out his proposition and it might be feasible and advisable to place him on the pay roll at as low a salary as possible, in case he could not afford to work for nothing and let the development of his invention go on under his direction as well as that of the director of the Bureau.

It may be that the idea is one that could be developed just as well at an experimental shop or research Laboratory near where the inventor lived, in which case the National Laboratory would prepare the necessary plans, provide all known data, on the proposition, and refer this matter to such nearby experimental shop or research laboratory, with a statement as to the financial extent to which the National Laboratory was willing to be held responsible. Again on the other hand, if the inventor, chemist, or manufacturer, could afford to pay for the facilities offered by the National Laboratory, the Bureau of Commercial Development would make such arrangements as to compensate the Laboratory for the use of equipment and material or the time of its employees.

Where a manufacturer was seeking new machinery or processes and made his needs known at the Bureau of Commercial Development, steps would be taken to gather all possible data known regarding similar machinery or processes in this country or in any other country and in the shape of a report and request for the new process or invention, spread the information where it would fall on fertile ground, at the same time trying to develop, where deemed advisable, the desired invention or process and when perfected the manufacturer would be informed of the tests, and arrangements for its use by him would be made through the Bureau of Commercial Development, so that the inventor, Research Bureau, and Laboratory may receive a compensation, if so desired.

To Help Develop War Inventions—

During the period of war special attention should be paid to the development of inventions to bring victory to American and Allied arms and any inventions so perfected to be presented to the United States Government free.

Initial Work of the Laboratory—

It is not the expectation that the National Laboratory will at this time enter into the construction of buildings nor is it the intention to secure machinery or equipment which may utilize the essentials now needed by the Government, but the Laboratory may rent or purchase suitable quarters already in existence.

Even now there can be purchased sufficient equipment without requiring new materials, until such time as a more complete equipment may be secured without embarrassing any Government department and on a more economical basis.

The preliminary work of the Laboratory during the period its own equipment was in course of organization, would be in collaborating with existing experimental machine shops, chemical and research laboratories in order to secure quick results. Its growth should be gradual.

It is desired to begin as soon as possible on the organization as well as preparation for development of such practical and valuable ideas which may be presented to the Board of Survey and Recommendation for their consideration.

The lives of great men all remind us,
We, too, can make our lives sublime,
And departing leave behind us,
Footsteps on the sands of time.
—Longfellow.

COMMENTS

OF

AMERICA'S LEADING MEN

OF

SCIENCE AND AFFAIRS

IMPORTANT NOTE.—The following comment on the necessity, importance, and desirability of the establishment of the "National Laboratory for Invention and Research" *is for private and confidential information and under no circumstances to be used for publication in any form whatsoever.* This matter has been copyrighted.

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Comments

Upon the request of the National Institute of Inventors to a trifle over one thousand of a selected list of inventors, scientific men, engineers, and men in public life, the following comment represents the expression of opinion of those who *endorse in principle* the establishment of a National Laboratory for Invention and Research along the lines laid out by the "Laboratory Foundation Committee," of the Board of Governors, of the National Institute of Inventors.

While these gentlemen endorse the project *in principle,* many of them dwelt upon various phases and were liberal in offering suggestions and criticisms of possible conditions liable to arise in the development of the Laboratory, which suggestions have been incorporated in the plan of organization and development, and which will be found detailed in the preceding pages of this book, while the criticisms have been provided for.

Briefly summed up, these suggestions or criticisms may be considered under the following classifications:

The Criticism *and* The Explanation

I.

Immensity of the Project.

While granting the importance, necessity and great value to the nation and its industries, a number expressed a fear that there would be a greater demand upon such a Laboratory than it would be able to efficiently handle; that the institution would be overwhelmed with ideas and suggestions and that it would be a physical impossibility to do justice to every proposition submitted. Wonder was expressed as to just how this could be overcome.

It was thought that in the flood of ideas that might be offered, many good things would be overlooked, as it was estimated that only one out of a hundred might be of practical value.

It is not the intention of the founders to jump immediately into the development of all kinds of inventions and research at the outset, but rather make a study of the experiences of existing research and experimental agencies and prepare a plan of operation whereby the development of the Laboratory will gradually grow, as time progresses, so as to eliminate as much as possible mistakes and wasted effort. This fact will be impressed very forcefully upon the public. Probably the first and most important work would be in aiding the United States Government develop certain of its war inventions. Next, would be classification of ideas which may be submitted, but under no circumstances would the Laboratory allow itself to be rushed.

II.

Peculiarities of Inventors.

Some writers thought the temperamental peculiarities of inventors would soon lead to adverse criticism of any Board of Survey and Recommendation, for each individual inventor would be obsessed with the idea that his invention was practical and of superior importance over every other invention and if not acted upon by the Laboratory would criticise its workings and those supervising the operation of the institution and thus its usefulness would naturally be curtailed. Furthermore, others thought inventors were of a suspicious nature and would decline to present their ideas to such a Laboratory for development.

Again, a few feared that after an idea was presented and development began, the institution would be handicapped by the idiosyncrasies of inventors who would not want to proceed unless their peculiar ideas were carried out, regardless of practicability.

The common idea that all inventors are cranks or partially insane is not borne out by actual experience, although it is true that occasionally a man is obsessed with the value of his idea. It has been the experience of the National Institute of Inventors that inventors, as a rule, are very glad and ready to accept suggested improvements or changes which will aid in developing the commercial value of an invention, for after all, it is its commercial success for which they aim and the financial reward is the incentive that urges them on. It is the fear of being defrauded of the success of their invention that really makes inventors sometimes of a suspicious nature, but a philanthrópic institution of the kind outlined, which is to receive no profit or benefit except by arrangement with the inventor, will inspire confidence and make the inventor feel he is working with a partner, who has no interest other than the success of the invention.

III.

Financial Difficulties.

A few writers had an impression that such an Institution, no matter how large, would financially be unable to carry out the ideals of its founders and endorsers.

No worry need be entertained regarding inability to financially carry out development of inventions, for no more work would be undertaken than its financial limits permitted.

IV.

Difficulties of Personnel.

Apprehensions were expressed by a few that there would be difficulty in securing the proper men of necessary training to carry on this great work and that in the beginning many mistakes would be made.

Nor need any apprehension be felt that the proper men cannot be secured for this great work, for our Universities and the engineering field would meet any demand.

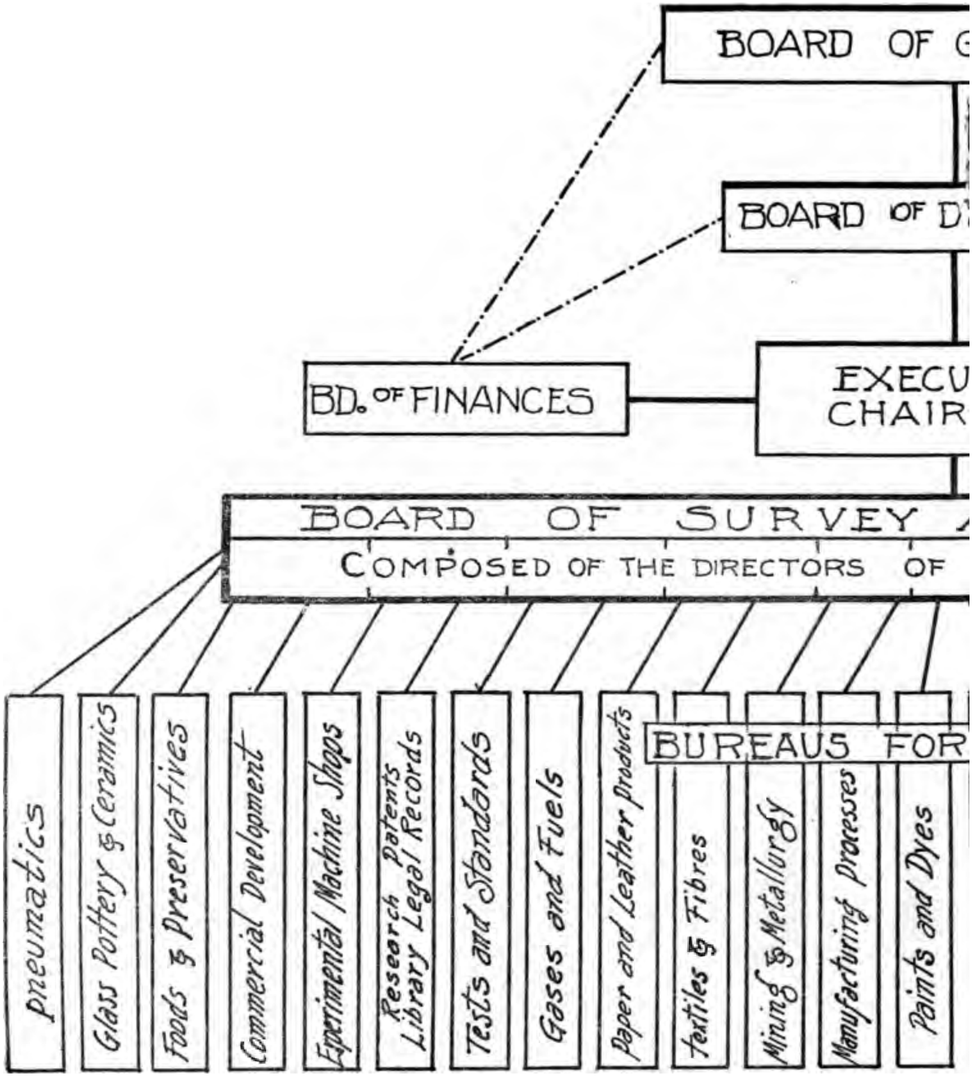
V.

Governmental Jurisdiction.

Certain writers, many already associated with Governmental agencies, exhibited desire for Governmental control of the operation of such a National Laboratory on the grounds that it was of national importance, and therefore, a Governmental function and that all funds should come from our National Treasury through Congressional appropriations, as it was too important a project for private and philanthropic endowment.

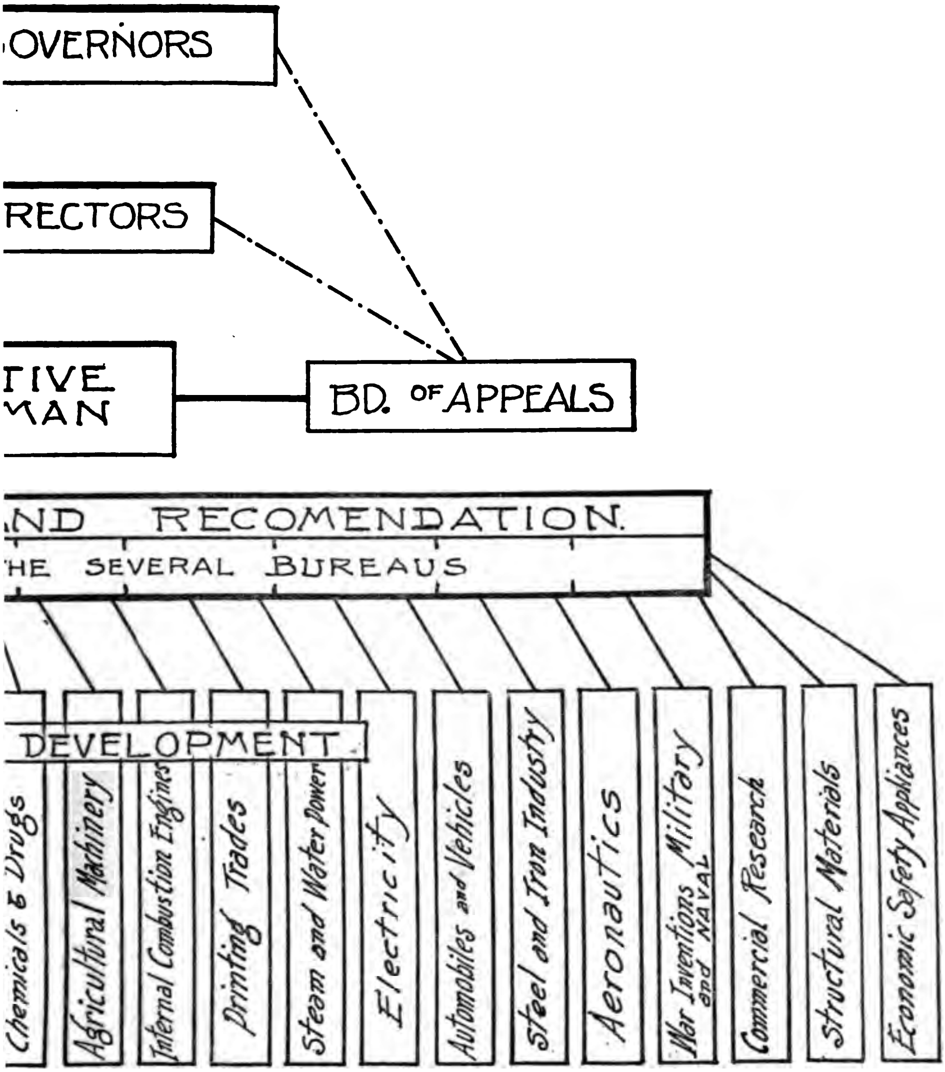
It is questionable if the Government could efficiently and satisfactorily operate and direct the development of invention and research where the profit thereof would go to private or corporate gain, for anyone who has experienced the usual red tape connected with Congressional appropriations and the expenditure of such funds, will readily understand the difficulties under which a Government Institution would work.

TENTATIVE PLAN OF ORGA
THE NATIONAL LABORATORY F



All plans submitted are tentative and subject to change by the National Exe operation of the Laboratory. Bureaus or other boards may be enlarged or conso

IZATION FOR OPERATING
R INVENTION AND RESEARCH.



ive Committee at the time of official organization of the staff in charge of the ed as may be considered necessary for efficiency.

VI.

The Problem of Location.

Solicitude was manifested by several that no matter where located, such a Laboratory would not be effective because of the fact that inventors came from all parts of the United States and suggested that instead of a central location, a number of separate Laboratories be set up in various parts of the country.

In a preceding part of this booklet the matter of location has been very comprehensively covered, and no matter where an inventor may be, his invention can be developed either in a central laboratory or in a laboratory or experimental shop in his own vicinity, where he may give it his personal supervision.

VII.

Monopoly in Invention.

Some set forth their qualms about the danger of such a Laboratory exercising a monopoly in invention and the possibility of it dominating the field, while others thought that every extreme should be resorted to, to prevent any corporation or monopolistic interest from controlling inventive genius through discouragement which such a Laboratory could render.

As outlined, the National Laboratory for Invention and Research, under no circumstances, could assume a monopoly for invention, but would use every effort to prevent any commercial monopoly from securing lontrol of an invention unless it intended to give the benefits therefrom to the public as well as compensate the inventor and Laboratory, as the Laboratory would have an interest in such invention.

VIII.

Profit-Sharing of Laboratory.

It seemed to be a general opinion that the Laboratory should have a part interest in all inventions it developed, wherever it spent its own money for the benefit of the inventor, and share in the profits thereafter, either on a royalty basis or sale outright. In this way, it was pointed out, the Laboratory would soon be on a paying basis and accumulate a fund for future work.

Without question, the expense of operating such a Laboratory would increase as its power for good grew, but through taking an interest in inventions developed, its income would increase as time went on. Thus its directors would aim to develop inventions most likely to produce revenue for the Laboratory, helping the inventor at the same time, and keeping down useless developments.

IX.

War Time Handicaps.

Some indicated misgivings as to the advisability of planning and carrying out the preliminary work necessary to the establishment of such a Laboratory while the war was in progress, explaining that they felt every energy should be exerted to secure victory over the common enemy before proceeding to secure the requisite endowments or organize such a Laboratory, primarily, on the grounds that all finances of the nation should be devoted to martial victory and no attempt should be made to divert essential materials to purposes of invention and research.

Never was a time more opportune than now to develop such an Institution, for whatever funds were used for its establishment, they would be devoted to a cause equally as important as that of our Nation itself. The thought of war preventing development of martial and naval inventions is not to be considered, while the fact that our European Allies and enemies are planning and carrying on the very kind of work that this Laboratory proposes should prove a spur and put a quietus on any thought of delaying its establishment, while Liberty Bond endowments would use up no funds.

X.

Opposition and Jealousy.

One writer displayed anxiety as to the amount of possible opposition and jealousy liable to exist among research and experimental agencies already established, as well as scientific men engaged in similar endeavors, fearing that this would keep them from supporting such a National Laboratory, either before or after organization.

The National Laboratory need fear nothing from these sources, as it proposes to work in conjunction with all research and experimental agencies, besides it is believed that the scientific men of America are too big, broad, and liberal in their ideals to permit any petty thoughts to hinder the progress of science or invention, but rather unselfish in their devotion to the common cause of humanity.

XI.

Buildings and Equipment.

A source of some concern was the thought that the establishment of such a Laboratory would involve the immediate construction of spacious buildings and the procural of liberal equipment, and the criticism was that owing to the scarcity of material, war needs might be interfered with and due to high prices prevailing too great an amount would be expended for edifices.

As stated previously there is no intention of proceeding at once to the construction of buildings or stocking up on equipment, but use will be made of all existing agencies supplemented by such equipment which may be secured without affecting Government requirements, and space rented for present needs; however, this is a minor detail for the Board of Governors to consider.

XII.

An Endowed and Philanthropic Institution.

The majority of writers unreservedly expressed a decided conviction that under no circumstances should such a Laboratory be under Governmental control or supported by Congressional appropriation, on the ground that political influence would play an important part in the development of invention and defeat the very ideals of the philanthropic purpose. Peculiarly, as it may seem a number of these objectors were men actually engaged in Governmental research work.

In all the comment received from Senators and Members of the House of Representatives, the law makers who would have to make appropriations for a National Institution, not one in any instance suggested the thought that this should be under Governmental Control, but unreservedly, favored an endowed philanthropic institution free of politics.

A few feared some "Trust" would secure control of the Institution.

To secure the best results and carry out the ideals upon which such an Institution would be established, it would be necessary that it be financially endowed and operated according to thorough philanthropic principles, exactly in the same manner as are operated private and public charitable Institutes. Can one conceive how the Rockefeller Institute for Medical Research, the Carnegie Institute, the Mellon Institute or the Sage Foundation, would work if under any other basis than endowed institutions? Their great success has been attained only because initiative has been left to its directors without unnecessary entanglements of red tape, the whole idea being to work for the common good.

An endowed institution would, like a snowball, grow larger and larger as new endowments were added to it in the future, and so likewise would grow its power for good in the nation. The freer the action of the directors, the greater the work of an institution.

XIII.

Exploitation of Invention.

The greatest complaint of the average inventor has been that no matter how valuable his invention, he has been the victim of exploitation by associations or parties, who in the first instance claimed that they wished to be of assistance in developing and commercially exploiting the perfected invention, and in the end, instead of being of benefit to the inventor, really deprived him of the just fruits of his labor.

To avoid any such possibility it was urged that only men of the highest calibre imbued with the loftiest sentiments and purest ideals be permitted to control the operation of such a Laboratory.

As the Laboratory would be philanthropic in ideals and operation, and its interest in any invention, if developed for an inventor at its own expense, would be small, it is not conceivable how such an Institution may secure a monopoly on any invention. On the other hand, however, having an interest in an invention, it would prevent monopoly on the part of any industrial combination or person, for to prevent unfair monopoly, is the very aim of the Laboratory. Through his contract with the National Laboratory, the inventor would be thoroughly protected against unfair exploitation.

Extracts from Letters of Endorsement

"I am heartily in accord with the scheme to establish a National Laboratory for Research and Invention.

"The principal aim and ambition in my life has been to be able to make sufficient money to endow an institution for the protection of American inventors.

"The plan which I had in mind for my inventors' institution was to erect buildings, machine shops, laboratories with a staff of patent experts, draftsmen, and engineers, so that the crude idea could first be investigated to see if it was original, then passed on to the engineers, who would co-operate with the inventor."

SIMON LAKE.

Submarine Inventor and Consulting Engineer; Member Institution of Naval Architects, London; Society of Naval Architects and Marine Engineers; American Society of Mechanical Engineers; American Society of Naval Engineers, Washington; National Institute of Inventors; Engineers Club; President of Lake Submarine Co., Lake Heat Engine Company, Merchant Submarine Company, Housatonic Shipbuilding Co., Lake Torpedo Boat Company.

"In my opinion there is a real need for a National Laboratory for Invention and Research, and I think it would give a great deal of encouragement to poor inventors.

"I am also of the opinion that it would be a great benefit in stimulating inventive genius in this country, and am very heartily in favor same."

JOS. E. FAWELL.

Fort Pitt Foundry, of Mackintosh, Hemphill & Co.

"Strikes me favorably."

LYMAN ABBOTT.

Editor "The Outlook."

"I believe the plan which you have outlined would be most advantageous to the cause."

FRANK T. CABLE.

Electrical Engineer; Vice-President and General Manager of the New London Ship and Engine Company; U. S. Government Expert on Submarines; Member Naval Consulting Board; former Superintendent of Holland Submarine Boat Company and developed the Holland Boat; Constructor of Submarines for Electric Boat Company.

"I would do everything possible to help advance any scheme for the benefit of our engineers and inventors I have had this wish in my mind for nearly twenty years.

"An organization like your Institute can afford to plan for the future, even for the time when its founders have passed away."

W. R. WHITNEY.

Director, Research Laboratory of General Electric Co.; Member National Research Council; Member U. S. Naval Consulting Board; former President American Chemical Society; also American Electro Chemical Society; Member American Society for Testing Materials; American Institute of Engineers; American Institute of Electrical Engineers; Society Chemique de Paris.

"I think such an institution might afford useful assistance to our inventors."

HENRY L. ABBOT.

Brigadier General U. S. A. (Retired).

"I sympathize most heartily with the aims of the National Institute of Inventors and hope the larger plan for endowing such work may be successfully carried out."

WALLACE W. ATWOOD.

Professor of Physiography; Department of Geology and Geography, Harvard University; Member of National Research Council; Secretary and Director, Chicago Academy of Sciences; Secretary of the Board of Trustees; Fellow, Geographical Society of America; American Academy of Arts and Sciences; Chicago Museum and Library Council; International Atlas des Formes du Relief, Terrestre, and author of a number of works on Geology and other scientific papers.

"I agree with your suggestion, and I am referring your letter to the Committee on Patents for their consideration."

HON. JOSHUA W. ALEXANDER.

U. S. House of Representatives; Chairman, Committee on the Merchant Marine and Fisheries.

"I heartily endorse the proposition to provide a laboratory for inventors, and I hope you will be successful in your undertaking."

GELLERT ALLEMAN.

Professor of Chemistry, Swarthmore College; fellow, Society of Chemical Industry, London; American Association for the Advancement of Science; Member, American Chemical Society; American Electro Chemical Society, Chemists Club; and expert in creosote and electrolysis.

"I feel the venture should be carried through. If it would be the means of encouraging and developing a single great invention that might otherwise not see the light of success, its existence would more than be justified."

FREDERICK D. ANDERSON.

Inventor of Motion Picture Apparatus.

"I wish you much success in your efforts to help to bring about this result."

HON. M. ALEXANDER.

Governor of Idaho.

"I feel that the new Laboratory which you are considering developing would be of great value. It would be in the same line as the Rockefeller Institute for Medical Research or the Mellon Institute for Industrial Chemistry but being a combination of a great many laboratories of a similar nature would undoubtedly help to develop researches which could not be carried out except for such an institution. I see no reason why the establishment of such a laboratory would in any way conflict with the present laboratories or research agencies. Problems which would take a long time to study and which could not be conveniently carried out in a university could be done in this way.

"You can see that I am thoroughly in sympathy with your plans and I hope I may be able to aid you further in one way or another in getting it started."

ROGER ADAMS.

Professor of Organic Chemistry, University of Illinois; Member of the National Research Council.

"I am greatly interested in your plan for the development of a national institute of inventors. I think that this country certainly needs greatly, and could be benefited immensely by a laboratory for invention and research in which anyone would be able to develop excellent ideas. By charging a certain percentage or royalty on profits from the inventions such an institute could easily be made self supporting.

"If I can be of any assistance in this matter please do not hesitate to call upon me and let me know in what way you desire my aid.

"Best wishes for the success of your program."

S. F. ACREE.

Professor of Wood Chemistry, New York State College of Forestry, at Syracuse University; Member American Association for the Advancement of Science; American Chemical Society (Chairman Organic Chemistry, 1909); Texas Academy of Science; Authority on Organic Chemical research.

"I think the idea is a most excellent one, and one that should be encouraged. I would like so much to see such a Laboratory established."

HON. R. LIVINGSTON BEECHMAN.

Governor of Rhode Island.

"The Surgeon General desires me to say that he approves and is in sympapthy with the principles included in your letter."

COL. FRANK BILLINGS.

Colonel, Medical Corps, N. A.; former President, Illinois State Board of Charities; former President of Chicago Medical Society; Member Chicago Neurologist Society; Illinois State Medical Society; former President American Medical Association; former President Association of American Physicans; the former President National Association for Study and Prevention of Tuberculosis.

"I have your letter of May 7th and for some time have been revolving in my mind a method of giving an opportunity to the inventive genius of America. I would have undertaken this some time ago, and have only been prevented by lack of time."

HON. B. M. BARUCH.

Chairman of War Industries Board; Member Advisory Commission to Council of National Defense.

"I recognize the merit of this project as there are so often cases of men who have ideas which if developed would be valuable to the Government or the world at large, but for the want of means and proper encouragement cannot develop them, or else go to Europe and are then eagerly snatched up sometimes to the detriment of our own country as several invntions now used in the present war have shown."

HON. SAMUEL W. BEAKES.

Congressman from Michigan.

"I am heartily in accord with all the ideas you advance in your leaflet enclosed with your letter."

DR. G. O. BREWSTER.

Expert in Body Armor; Member of National Research Council.

"The project is all right with one proviso: that every man assisted should pledge a percentage of the profits of his prospective invention to the institution so that it may grow in proportion to its usefulness."

ANDREW C. LAWSON.

Professor of Geology; Dean, College of Mining, the University of California; member National Research Council; former Delegate Geological Congress, London, St. Petersburgh, Toronto; Chairman California Earthquake Investigation Committee; Fellow, Geological Society of America; Mining and Metallurgical Society; Member American Association for the Advancement of Science; former President Seismological Society of America; Member American Institute of Mining Engineers; author of numerous geological papers and monographs.

"The thought is a very good one and in fifty to sixty per cent. of the cases would work out very well."

J. C. BOHMKER.

Inventor of Agricultural Implements, and General Manager of the David Bradley Manufacturing Works.

"On the other hand, if it were possible to create such a Board that would help inventors, it would certainly be a wonderful thing."

CARL G. BARTH.

Consulting Engineer; Expert in shop management, Ordnance Dept. U. S. A., 1909; Taylor System of Scientific Management of Machine Shops; Member American Society Mechanical Engineers; American Association for the Advancement of Science; Franklin Institute; American Forestry Association; Engineers Club.

"Your Association approaches the subject in the most perfect spirit of any proposition so far offered."

CHARLES S. BRADLEY.

Inventor of Processes for Taking Nitrates from the Air, and extraction of copper from ores; Electrical Engineer; Member American Association for the Advancement of Science; American Society of Electrical Engineers.

"If there is not now a sufficient stimulation and protection in the commercial laboratories and the industries, then some kind of a supplementary institution or movement should be established. If placed under able guidance and well organized, and supported with sufficient funds to be effective, I should think that such a laboratory would be as useful for research in these lines as other laboratories for research in the chemical, biological and similar sciences."

LIBERTY H. BAILEY.

Expert on Agricultural Machinery; on Agricultural subjects, and author of Cyclopedias of Agriculture, Horticulture, Textbooks, etc.; Director, Columbia College of Agriculture; awarded Veitchian Medal 1898; Chairman Roosevelt Commission on Country Life, 1908; Fellow American Academy of Arts and Sciences; Member Philosophical Society.

"I will say that your plan to help the poor inventor develop his ideas is a very good one if properly managed.

"I am favorably impressed with not only the feasibility but the necessity for a laboratory for Invention and Research. If managed with discretion it certainly must be of inestimable value to the world."

LUTHER BURBANK.

The Plant Wizard; Member, American Pomological Society; Life Fellow, American Association for the Advancement of Science; Honorary Member Royal Agricultural Society of Sweden; California State Board of Trade; California State Floral Society; California Academy of Sciences; American Breeders Association; Pacific Coast Association, etc.

"It seems to me that the idea is a good one. The inventive genius of America should be encouraged in every possible way, and certainly there has never been a period in our National history where it was more important to stimulate the ideas of the inventor than at the present time."

HON. EUGENE BLACK.

Congressman from Texas.

"Sounds like a good idea, and, if successfully carried out, should prove a real aid to commercial progress not only in the present emergency but in the reconstruction period after the war."

H. H. BROWN.

Editor, "Marine Engineering."

"I am in thorough sympathy with your suggestion and I will gladly support any such measure."

HON. EDWARD E. BROWNE.

Congressman from Wisconsin.

"The plan of having a philanthropic institution of this kind under the direction of well-known inventors and engineers is one which appeals to me. I fear that the poor inventor finds himself only too often deprived of his legitimate rewards and if this condition can be relieved by an Endowed National Laboratory, the establishment of such an Institution is in every way desirable."

C. A. BROWNE, Ph.D.

Chemist in charge New York Sugar Trade Laboratory, Inc.; Member American Chemical Society; Association des Chemistes de Sucurerie de France; Chemist's Club, New York; author and authority on sugar analysis and its uses; also associate editor "Journal of the American Chemical Society" and "Journal of Industrial and Engineering Chemistry."

"Your letter of April 27th relative to a philanthropic laboratory voices a great need.

"A company such as the one with which I am connected does essentially what you outline. The majority of its efforts are probably failures, but it makes enough on its few successes to pay for its failures many times over."

SAMUEL E. DOANE.

Chief Engineer, National Lamp Works of General Electric Co.; Fellow American Institute of Electrical Engineers.

"Any organization, properly administered, which looks towards the stimulation of the inventive genius, especially when said genius is seriously handicapped by lack of finances, should be supported, provided it is administered with the dual objects in view: stimulation of invention, and adequate support of justifiable ideas."

CHARLES BASKERVILLE, Ph.D., F.C.S.

Professor of Chemistry, College of City of New York; discoverer of Chemical Elements, collium and berzieum; Fellow American Association for the Advancement of Science; London Chemical Society; Society Chemical Industry; Washington, North Carolina, and New York Academies of Science; Franklin Institute; American Chemical Society; American Electro Chemical Society; Engineers Club; author and authority on Chemical and other scientific subjects; Inventor of processes for refining oils.

"I will say that it seems to me such an organization as you propose might be very useful."

CHARLES J. BONAPARTE.

Former Attorney General, U. S. A.; Overseer Harvard (1891-1903); President Enoch Pratt Free Library, Baltimore; awarded Laetare Medal.

"Am strongly of the opinion that a National Laboratory for Invention and Research would be of great benefit not only to the inventors but to our country and to the public at large, by giving encouragement to the development of worthy inventions in cases where the inventor cannot afford to supply or are unable to obtain the funds necessary for the development of their ideas.

"Wishing you success in your undertaking to bring about the establishment of such a laboratory."

H. M. BOYLSTON.

Metallurgical Engineer.

"Certainly this plan appears to me to be entirely feasible and practical."

HON. EMMET D. BOYLE.

Governor of Nevada; Mining Engineer; Member American Institute of Mining Engineers; American Academy of Political and Social Science.

"The idea is a famous one, and I would suggest, that it is to be put in execution."

THEODORE BOLLIN.

Inventor of the Bollin Process of Dissolving Minerals.

"I admit the importance of something of this kind and think that something might be worked out. It would, without doubt, be a valuable asset to the inventors of this country."

E. H. S. BAILEY.

Professor of Chemistry, University of Kansas; Chemist, Kansas State Board of Agriculture; State Board of Health; Honorary Member American Institute of Homeopathy; Counsellor Kansas City Section American Chemical Society; Fellow American Association for the Advancement of Science; Member Kansas Academy of Science; author and authority on chemical and scientific subjects.

"It goes without saying that any legitimate method of encouraging and developing desirable results of invention will be highly beneficial to the country and to every community."

WM. H. BURR.

Consulting Engineer of note of many of the most important public works in the United States and Central America, and particularly, on the Water Supply of New York City; was appointed by President Roosevelt, Isthmian Canal Commission and Member Board of Consulting Engineers; appointed by Governor Dix Consulting Engineer, Board of Water Supply, New York City; Member of the Advisory Board of Engineers of Construction of Barge Canal, State of New York; awarded first place in national competition in 1900 for proposed Memorial Bridge across the Potomac at Washington; Member American Society Civil Engineers; Institute Civil Engineers of Great Britain and many other scientific societies; author and authority on structural materials and bridge building and a contributor of note to scientific publications.

"Unquestionably, a free laboratory where an inventor could develop his ideas is a very good thing.

"If my advice can be of any value to the National Institute of Inventors, I will be glad to have you call upon me."

B. L. BOBROFF.

Consulting Engineer.

"I am, however, of the opinion that any plan which will develop the inventions of America should be given earnest encouragement."

HON. JAMES M. COX.

Governor of Ohio.

"This is exactly the sort of thing that should be developed. In a good many addresses I have urged that pure and applied science should be brought together in mutually helpful relations, and the plan you have in mind would begin to bring that to pass. I seems to me therefore that it is a movement in the right direction, and if organized effectively would certainly make for national progress."

JOHN M. COULTER.

Professor of Botany; Member of National Research Council; Founder and Editor, "Botanical Gazette"; Fellow American Academy Arts and Sciences; former Vice-President American Association for the Advancement of Sciences; Member National Academy of Sciences; former President Botanical Society of America; American Society of Naturalists; Society of Plant Morphology and Physiology; Washington Academy of Sciences; Corresponding Member British Association for the Advancement of Sciences; Botanical Society of Edinburgh; President Chicago Academy of Sciences; author and authority on botany and plant life.

"There seems to be a real necessity for such a service to inventors as you outline."

CLAY C. COOPER.

Managing Editor of "Mill Supplies."

"Your general project appeals to me as fundamentally sane and if it can be adequately financed and intelligently controlled, so that it will on the one hand safeguard the inventor from exploitation, and on the other, safeguard the public from being victimized by organized profiteering, I should be strongly favorable. I see no intrinsic reason why these results cannot be attained."

JAMES R. ANGELL.

Dean, University of Chicago; Member, National Research Council; former President, University of Chicago Settlement; Member Psychological Association, and an author of note on physchological subjects.

"I am heartily in favor of any proposition along the lines you suggest and will be glad to be of any assistance I can in pushing such legislation through Congress.

"Good luck to you and your colleagues.

HON. WILLIAM J. CARY.

Congressman from Wisconsin.

"It will most widely benefit the country in general, and will be of the very greatest possible benefit.

"It will contribute very materially to the enrichment of the country as a whole, will fortify us in the enterpprises of both peace and war, will prove a great stimulus to inventive minds and will, by intelligent direction of effort, help introduce order and sanity where only disorder and insanity reign now.

"I hope that you may be able to institute such a laboratory and that you may find the man somewhere in America, or rather the men somewhere in America, who have in their minds, perhaps only dimly seen and unrecognized, the things we need to make us great in both peace and war."

GEORGE WOOD CLAPP, D.D.S.

Editor of "The Dental Digest."

"It would seem to me that there can be no question as to the feasibility and desirability of anything and everything that would encourage invention and research. Therefore, I do not think there is any question at all as to the desirability."

HON. WILLIAM A. CLARK.

Mining Operator and former U. S. Senator from Montana; Member of American Institute of Mechanical Engineers; Chamber of Commerce, New York; President United Verde Copper Co.

"It would seem of course, as a general proposition, that the establishment of such a laboratory, properly endowed, could not but be a benefit."

HARLOW C. CLARK.

Editor of "Aera Magazine."

"It is of course perfectly patent that a National Institute which would supply aid for research would have great value and I certainly think that any step of a sufficiently large magnitude which could be taken would be well worth the attempt.

"I think that everything is to be said in favor and nothing against the project that you propose."

J. CROSBY CHAPMAN.

Member of the Committee on Classification of Personnel in the Army; Member of National Research Council.

"If such a laboratory were available for really worthy inventions, it would be a good thing."

GANO DUNN.

President, J. G. White Engineering Corporation; Member National Research Council; former President New York Electrical Society; American Institute of Electrical Engineers, and United Engineering Society; Chairman of Engineering Foundation; President the John Fritz Medal Board of Award; Member International Electro Technical Commission; United States Delegate and Vice-President International Electric Congress, Turin, 1911; Delegate Pan-American Scientific Congress, Washington, 1915; Honorary Member Association Iron and Steel Electrical Engineers; Fellow American Institute Electrical Engineers; Institute of Radio Engineers; Member American Society of Mechanical Engineers; British Institution of Electrical Engineers; Franklin Institute; Illumination Engineering Society; American Association for the Advancement of Science; New York Historical Society; New York Zoological Society; New York Academy of Sciences and Engineers Club.

"It appeals to me very strongly, since in my judgment, it would meet a long felt want."

HON. G. P. COLEMAN.

State Highway Commissioner; Member of National Research Council.

"I am heartily in accord with this prpoject. I firmly believe that there is great need for such an institution and I will be more than pleased to render any assistance that you may require in this connection."

F. S. COOPER.

President, Cooper Research Company; Chemical and Metallurgical Engineers.

"If the Institute can be of service to any inventor in developing an article that might be of great economic value, aid should be given in its promotion."

THEODORE CLAPP.

Inventor.

"From my slight personal knowledge of the difficulty that inventors often have in placing their inventions before intelligent and responsible critics, it appears to me that the Institute would serve a very useful purpose, especially just at this time, and that it would be well worth while to work for the establishment of a national laboratory where inventions could be tried out and those that are of value brought to the attention of the proper authorities.

"I wish for you and the Institute the best of success in your efforts."

COL. CHARLES F. CRAIG.

Lieutenant Colonel, Medical Corps, U. S. Army; Member National Research Council; Bacteriologist and Pathologist; Member American Medical Association; Connecticut State Medical Society; American Society of Tropical Medicine; Society of Tropical Medicine and Hygiene, London; National Association for Study and Prevention of Tuberculosis; former President Yale Medical Alumni Association, and author of note on fevers and tropical diseases.

"It appears from the plan outlined that your proposed Laboratory would do for industrial research and applied science what the Carnegie Institute of Washington is now doing for the advancement of scientific research."

R. L. FARIS.

Superintendent, U. S. Coast and Geodetic Survey Department of Commerce; Member National Research Council; Fellow, American Association for the Advancement of Science; Member Philosophical Society, Washington; Washington Society Engineers; Washington Academy of Sciences; International Association Navigation Congress.

"I wish you success in your new undertaking."

HON. JOHN M. BAER.

Congressman from North Dakota.

"This is a splendid idea and we would be glad to have this Laboratory in Florida."

HON. SIDNEY J. CATTS.

Governor of Florida.

"Your proposal to establish a Laboratory of Inventions is believed to be a good one. I am sure the Surgeon General would approve of the proposition in principle."

COL. C. R. DARNALL.

Colonel, Medical Corps U. S. A.

"I think your plan very good. I do not see how there can be any question as to the desirability for or the great results to be accomplished through such a plan.

"I should think there is a need for your endeavors and trust you may continue them and obtain the desired results."

LOUIS L. DRAKE.

Publisher "Paint and Varnish Record."

"I feel that the conception of such an attainment or object is based wholly on a resultant desire for the good of inventors, and the uplifting of the world; and if this is true the result will be accomplished."

ROBERT L. DAY.

Inventor of Gypsum Slab Reinforced Construction System.

"I believe that the existence of such a research Laboratory would be of great value if properly conducted."

J. W. ELLINS.

Consulting Engineer; Superintendent of Filtration, Cincinnati Water Works.

"It occurs to me that it has much merit. If a laboratory such as suggested by your organization were created, it would result in a marked stimulation of the inventive genius of our people. For this reason I believe that your suggestion should receive careful consideration."

HON. JOHN J. ESCH.

Congressman from Wisconsin; Committee on Interstate and Foreign Commerce.

"I believe that all proper methods should be adopted to stimulate the inventive genius of the country."

HON. J. I. FRANCE.

U. S. Senator from Maryland.

"On the whole I think the plan is excellent and would increase the output of sound inventions."

CHARLES C. GUTHRIE.

Professor of Physiology and Pharmacology; Pittsburgh University; Member National Research Council; American Physiological Society; Society Pharmacology and Experimental Therapeutics; Society Experimental Biology and Medicine; authority on Physiology.

"Your circular embodied an old dream of mine, to which I have given utterance at many occasions."

L. H. FRIEDBURG.

Professor of Chemistry, College of the City of New York; authority on chemical research.

"I think an institution as outlined would be of immeasurable benefit to the whole nation.

"I can see only progress and benefit and no draw backs in the idea and I sincerely hope it will obtain the financial backing it deserves."

THORALF FABRITIUS.

Civil Engineer and Inventor.

"I am heartily in accord with this movement and think that such a laboratory, efficiently managed and directed, would prove to be a valuable progressive institution of great benefit to America."

HON. JOHN R. FARR.

Congressman from Pennsylvania; Committee on Naval Affairs.

"I can conceive that a National Laboratory for Invention and Research could, if properly conducted, become an Institution of very real value to the country."

B. C. FORBES.

Financial Writer and Authority; Publisher and Editor of "Forbes" Magazine."

"It seems to me that you are performing a most valuable and indeed, an almost indispensable work for the entire country, and your efforts should meet with hearty response among the business men of the country.

"At the present time, never was it more important that the inventive genius of the land be encouraged than at the present moment. By all means, I think you should continue with your work, and never for a moment consider its abandonment."

W. J. FIELD.

Editor of "Electric Traction."

"It is certainly true that American inventiveness must be mobilized and used as completely as possible, if we are to defeat German science without too great a cost."

GORDON S. FULCHER, A.M.E.

U. S. Signal Corps; Professor of Physics, University of Wisconsin; Member of National Research Council; Member American Physical Society; American Association for the Advancement of Science.

"Idea seems good."

HON. N. J. GOULD.

Congressman from New York.

"The establishment of a Bureau and Laboratory for Invention would be a most useful step. For such a laboratory with intelligent, friendly, and disinterested assistance would in some instances be the greatest boon, and the results could safely be expected to more than repay the effort and expenditure."

A. HRDLICKA.

Curator, Smithsonian Institute; Member National Research Council; Fellow American Academy of Arts and Sciences; American Assoociation for the Advancement of Science; Association of American Anatomists; American Anthropological Association; Washington Academy of Sciences; Ex-president Anthropological, Biological and Medical Society; Corresponding Member Bohemian Ethnological Society; Bohemian Association of Sciences; Bohemian Academy; Titulary Member Paris Societe d' Anthropologie; Corresponding Member Anthropological Gesellschaft, Vienna; Society des Americantes; Society Italiana, di Anthropolgia, Florence, Society, d'Famille Historie Nationale and d'Anthropolgin, Moscow; Associate Editor "American Naturalists"; author and authority on Anthropology.

"I believe that a well conducted institute of the nature outlined in your letter would be of great advantage and productive of good results."

HON. WM. S. GREENE.

Congressman from Massachusetts.

"As an inventor, I wish to state that a National Laboratory for testing and research work would in my estimation be the one thing which the inventors of this country have needed for years. If conducted along the right lines would do more to promote and hasten scientific work than anything ever brought to my attention."

L. S. GARDNER.

Inventor and General Manager of Gardner Carburetor and Brass Works.

"It is an excellent idea. Your plan is one that ought to appeal to all thoughtful Americans."

HON. EDWARD W. GRAY.

Congressman from New Jersey.

"It would be of inestimable value towards the progress of invention in America.

"We think you have struck a very good idea, and the writer through the 'Electrical Experimenter' shall be very glad to give you all the support he possibly can, and shall be glad to be at your service at any time."

H. GERNSBACK.

Editor of "The Electrical Experimenter."

"A laboratory in which inventors might develop their ideas would certainly be a popular and doubtless useful institution."

D. R. HOOKER.

Professor of Physiology, Johns Hopkins University; Member of National Research Council; Member American Physiological Society; Fellow American Association for the Advancement of Science.

"I have no doubt that an institution of this sort would be of very great benefit, not only to the United States, but to its inventors as well."

ELWOOD HAYNES.

President, The Haynes Stellite Co.; Inventor: Discoverer of Tungsten Chrome Steel, Chromium and nickel alloy, cobalt, and chromium alloy; designer of the oldest American automobile in existence; inventor of a Rotary Valve Gas Engine; Member American Chemical Society; Society Automobile Engineers; Iron and Steel Institute, London; Member Organizing Committee Eighth International Congress Applied Chemistry.

"I think the plan as you outlined it is a worthy one and should have support."

B. T. GALLOWAY.

Plant Pathologist; U. S. Dept. of Agriculture, Assistant to Secretary of Agriculture; Member National Research Council; Dean, New York State College of Agriculture, Cornell University; Fellow American Association for the Advancement of Science; authority on agriculture; author of note.

"I consider your idea of a National Laboratory for invention and research a good one, and I trust that you may be able to establish such a laboratory in this country."

HON. LOUIS B. GOODALL.

Congressman from Maine.

"I have carefully read the letter and am glad to add my hearty approval of the plan outlined therein. It has always been my opinion that an institution as you suggest, if properly and conscientiously conducted, would fill a much needed requirement of our family of inventors."

L. GESSFORD HANDY.

Patent Attorney.

"I have thought, however, that there is very great need of some kind of facilities designed to accomplish the ends and purposes sought and described in your letter; I still think so."

HON. CORDELL HULL.

Member of Congress from Tennessee; Committee on Ways and Means.

"Your scheme is to my mind, a great thing; in fact, something that should have been created long ago."

E. HEDENSTROM.

Inventor of Automatic Aerial Torpedo.

"I think it is a splendid idea and I shall favor it in every way that I can."

HON. HARRY E. HULL.

Congressman from Iowa.

"A National Laboratory to aid Inventors to my mind is a good one.

"You can depend on me for anything I can do in that direction. My best wishes for the proper growth and prosperity of the cause."

ALBERT HUPP.

Inventor of Automatic Railroad Equipment and Automobiles.

"A laboratory of this kind would not, of course, interfere with the existing laboratories of research, but would supplement their work."

W. H. HOWELL.

Professor of Physiology, Johns Hopkins University; Member of National Research Council; Associate Editor Journal of Experimental Medicine and American Journal of Physiology; awarded prize by Americal Physiological Society and National Academy of Sciences; Fellow American Association for the Advancement of Science (Vice-President, 1908); American Society of Naturalists (Vice-President, 1909); American Physiological Society (President, 1906); American Society of Experimental Biology; American Philosophical Society; an authority on physiology.

"The fact that the idea originated with your Institute would indicate that it is worthy of consideration. In my opinion, such an enterprise, under a broad and liberal policy and buttressed by the sympathetic support and co-operation of our leading inventors might result in giving to America some invention of great present utility, as you suggest, and, in any event, would undoubtedly conduce to the expansion and success of our commerce when the war is over. Aside from any material consideration, from a humanitarian standpoint alone, the project is an appealing one."

HON. F. P. HARRIS.

Rear Admiral, Industrial Dept.; United States Navy Yard; U. S. Shipping Board; Expert on Dry Dock Construction; Associate Editor American Civil Engineers Pocket Book; Member American Society of Civil Engineers; Society of Naval Architects and Marine Engineers; Naval Institute.

"An institute for the development of promising inventions would certainly be a most valuable national asset, especially at a time like this."

YANDELL HENDERSON.

Professor of Physiology, Yale University; Member National Research Council; American Medical Association; American Physiological Association; American Pharmacal Society; Vice-President National Society Anaesthetists; Physiological Society of Great Britain; American Association for the Advancement of Science; Honorary Member American Climatological Association; author and authority on Physiological subjects.

"The plan you outline seems to be a very interesting and attractive one."

K. F. KELLERMAN.

Associate Chief of Bureau of Plant Industry, U. S. Department of Agriculture; Member of National Research Council; Fellow American Association for the Advancement of Science; Member Biological Society of Washington; Society of American Bacteriologists; Botanical Society of America, American Public Health Association; author of note on scientific articles, bacteriology, water, and sewage treatment.

"Such a proposed institute of invention could be made very useful. It would require most careful administration to separate the real inventor from the multitude of visionaries who have some scheme or other which they think could be made to work. I trust that the plan may be carried out."

DAVID STARR JORDAN.

Former President and Chancellor of Leland Stanford University; Former President American Association for the Advancement of Science; National Educational Association; Member American Philosophical Society, American Ornithologists Association, Biological Society of Washington; Former President California Academy of Science; Member Advisory Council Simplified Spelling Board, Zoological Society of London, Naturalists Club of Sidney, N. S. W.; Member of various other scientific societies; author of considerable note on various governmental, humanitarian, and scientific works.

"This is a matter of vital importance both to the United States Government and to each individual inventor attempting to better the condition of mankind and themselves."

R. C. M. HASTINGS.

President International Telephone Co.; Member Franklin Institute; Invented the Automatic Selective System of Telephony.

"I am in accord with the project set out in your letter of May 8th, to provide a Laboratory in America to aid the poor inventor in developing and protecting his ideas."

HON. GEO. W. P. HUNT.

Governor of Arizona; President Anti-Capital Punishment Society of America; author of note on humanitarian subjects.

"If properly conducted and in the hands of men who are thoroughly competent, I think that an institute of this kind may be extremely useful. If you can find such men to direct the work, the Institute may be very useful, indeed.

W. A. NOYES.

Director of Chemical Laboratory, University of Illinois; Editor of "Journal American Chemical Society"; Member of National Research Council; Member National Academy of Sciences; Fellow American Academy of Arts and Sciences; Member Philosophical Society; Indiana Academy of Science (President, 1894); Illinois Academy of Science (1911) and Chairman Chemical Section (1896), American Association for the Advancement of Science; Authority and author of note on chemical subjects.

"I would say that the avowed purposes seem to me very worthy of support. If in full truth the National Laboratory would augment and in no wise hinder these other agencies, your proposal seems to me a very excellent one."

PROF. TRUMAN L. KELLEY.

Teachers College, Columbia University; Member of National Research Council.

"I can readily conceive that such an institute, properly organized and managed, might serve a most useful purpose, if only by reducing the number of patents allowed under the present system or by raising their average value."

W. F. HILLEBRAND, Ph.D.

Chief Chemist, Bureau of Standards; Member of National Research Council; Member National Academy of Sciences; Former President American Chemical Society; Member American Philosophical Society; Colorado Scientific Society; Fellow American Association for the Advancement of Sciences; author of note on mineral chemistry, and principles of rock analysis and methods of silicate and carbonate analysis.

"As regards the National Institute of Inventors, I have felt for a long time that there should be something of this character in this country and I am very glad indeed to learn that this movement has been started. There is surely a great work for an organization such as is set forth in your prospectus and I firmly believe that it will be a splpendid thing, not only for the inventors of our country, but also for the industries and for the country itself.

"I certainly feel that the work should be continued and assure you of my best wishes for the success of the institute."

HARRY HILLMAN.

Editor of "The Inland Printer."

"It seems to me that there is a great field of usefulness for the proposed National Laboratory for Invention and Research. I know of no other agency capable of rendering this service in this country. The National Laboratory should meet the needs of the country in the most expeditious and satisfactory manner. I hope that your Institute will be able to make the laboratory a success."

THEODORE HOUGH.

Professor of Physiology, University of Virginia; Member of National Research Council; Fellow American Association for the Advancement of Science (former Vice-President); Member American Physiological Society, American Society of Naturalists and author of note on Physiology and Hygienic subjects.

"It strikes me that this would be a very fine thing to do, and one from which we might expect great good. I wish you success."

HON. WESLEY L. JONES.

U. S. Senator from Washington; Chairman of Committees to Investigate Trespassers upon Indian Lands.

"This project, which appears to be similar to a financing scheme which has been described as being operated in Germany, would appear to me to be eminently worthy of consideration."

HERBERT E. IVES.

Chief Signal Officer of the Army, War Department; Chief Physicist United Gas Improvement Co.; Member of National Research Council; awarded Longstreth medal Franklin Institute, 1906; Member American Physical Society; American Illuminating Society; Washington Philosophical Society; Expert on light effects and photography.

"I am of the opinion that the establishment of a National Laboratory for Invention and Research will fill a distinct need and is likely to prove a blessing to inventors and country at large."

GEO. M. KOBER.

Dean and Professor of Hygiene, Georgetown University; Member of National Research Council; Secretary Washington Sanitary Improvement Co.; Member President's Home Commission; Board of Charities of District of Columbia; Former President Association of Americal Medical Colleges; Former President, Section IV, Industrial and Occupational Hygiene; 15th International Congress on Hygiene and Demography; Fellow American Association for the Advancement of Science; Secretary Association of American Physicians; Anthropological Society of Washington; Medical and Surgical Society of District of Columbia; National Association for Study and Prevention of Tuberculosis; Member Washington Academy of Sciences; American Anthropological Society; American Medical Association; Association of Military Surgeons, U. S.; and author of note on surgical, sanitary, and analytical subjects.

"The movement has my hearty support. I have been attempting to create some public opinion in favor of such a project without mentioning any scheme of organization that should carry on this work."

C. M. JANSKY.

Associate Professor of Electrical Engineering, University of Wisconsin; Member of National Research Council; Associate Member American Association of Electrical Engineers; Prague Society of Physics and Mathematics.

"Your ideas ought to have been carried out years ago."

J. W. IVERY.

Inventor and former Cement and Clay Expert for United States and British Governments.

"I am with you absolutely concerning your idea of a National Institute of Inventors. I am astonished utterly to know there is no such thing and evidently there is not."

BOLLING ARTHUR JOHNSON.

Editor and publisher of "Lumber World Review."

"A National Laboratory for invention and research would certainly be of the utmost value. We would be pleased to co-operate with you in any manner possible."

HON. XAVIER A. KRAMER.

Mississippi State Highway Engineer; Member National Research Council.

"Viewing this matter from all points it seems to me that a National Research Laboratory would be a step forward, and would be of great advantage to inventors and the Public at large."

WM. J. KUNTZ.

Inventor; General Manager of Steacy-Schmidt Mfg. Co.; Secretary and Treasurer, Ruggles-Coles Engineering Co.

"I can see the great possibilities of such a Laboratory. The idea is an excellent one.

"The control must be so broad in its character and vested in men of such standing that here can be no question of their philanthropic interest and their integrity of purpose.

"To my mind there is no limit to the effective work which such a Laboratory might accomplish if properly endowed and directed."

HON. H. B. KUMMEL.

State Geologist of New Jersey; Member of National Research Council; Associate editor "Journal of Geology"; Fellow Geological Society of America; American Association for the Advancement of Science; Former President Association of American State Geologists, and author of note on geological subjects.

"I shall be pleased to assist in any way I can to help along an organization such as you contemplate."

HON. JULIUS KAHN.

Congressman from California; Committee on Military Affairs.

"Should prove decidedly helpful in the encouragement and promotion of inventive genius, and I wish you every possible success in the proposed undertaking."

THOMAS J. KEENAN, F.C.S.

Editor of "Paper."

"The advantages of a national laboratory for research to develop inventions are obvious."

F. W. KEOUGH.

Editor "American Industries."

"I very much approve of the work of your institution. Many valuable inventions have been thrown by the wayside for the want of a 'friend at court.' The man who has something of merit should be encouraged to develop it and the way should be made plain and easy for him to secure a patent.

"I believe you will accomplish great good."

HON. W. S. KELLER.

Albama State Highway Engineer; Member of National Research Council; American Society of Civil Engineers; Alabama Association of Highway Engineers, and an engineer of note on road development.

"I will be delighted to assist in any way possible to bring about some sort of a situation whereby a poor man may develop and perfect his ideas in the form of inventions, especially during these wartimes."

HON. ERNEST LUNDEEN.

Congressman from Minnesota.

"I know of nothing likely to contribute more to the welfare of the whole world than some such institute as you have established for assisting poor inventors to profit by their inventions and I assure you of my hearty sympathy in the work your Institute has undertaken."

HON. MERRILL MOORES.

Congressman from Indiana.

"A laboratory of this type, if properly organized and conducted will, no doubt, prove to be a profitable investment."

JACOB G. LIPMAN.

Dean and Director, New Jersey Agricultural Experiment Station, and Member of National Research Council; Fellow American Association for the Advancement of Science; Member American Public Health Association; American Chemical Society; Society for the Promotion of Agricultural Science, American Society of Agronomy; Association of Official Agricultural Chemists, Society of American Bacteriologists, New Brunswick Scientific Society, New Jersey Science Teachers' Association, and author of note on soil bacteriology and other scientific subjects connected with agriculture.

"In my opinion there is much opportunity for research work and the institution of experimental processes by men with balanced ideas, and this is much needed by the American people, regardless of the war."

JOHN URI LLOYD.

Manufacturing Pharmacist; Member of National Research Council; Former editor "Pharmaceutical Review," "Eclectic Medical Gleaner," "Eclectic Medical Journal"; President Lloyd Library and Museum; Former President American Pharmaceutical Association; Member National Eclectic Medical Association; Ohio Pharmaceutical Association; Ohio Eclectic Association; Author's Club; Franklin Institute, and author of note and authority on chemical subjects.

"I feel that such a Laboratory would be of great value to this Nation. All possible aid and encouragement should be extended to those who wish to develop ideas of value."

HON. ADAM B. LITTLEPAGE.

Congressman from West Virginia; Committee on Naval Affairs.

"I am heartily in accord with your plans and feel certain that such an institution, liberally endowed in order that it may carry on its work in as broad a scope as possible, will be wonderful value to our country, not only in the perfecting of war inventions, but in the development of inventions and processes whereby our nation may maintain and become the greatest commercially in the world.

"It is not the work of today that counts, but it is the seed that is planted now and which bears fruit half a century hence that really counts when the development of a nation is considered."

DR. J. F. C. LUHAN.

Surgeon and Inventor.

"There can be no doubt that a research laboratory such as you outline would if held up to the high ideals indicated, be of great value."

GEORGE J. MURDOCK.

Electrical Engineer and inventor of Enclosed Arc Lamps, Bolt Machines, Exhaust Turbines, Machine Tools-Combustion Engines, and author of note on electrical and mechanical subjects; Fellow Royal Society of Arts, London; British Academy of Arts.

"The idea appeals to me as a good one. I hope you can secure the necessary backing to carry the plan through."

DR. WILLIAM J. MAYO.

Surgeon, Director of Mayo Clinic of Rochester, Minnesota; Mayo Research Foundation; Member of National Research Council; President Minnesota State Medical Society (1895); President American Medical Association 1905-6; President American Surgical Association (1913-14); President Society of Clinical Surgery (1911-12); Fellow American College of Surgery; Member Clinical Congress Surgeons of North America; Academie de Medecine de Paris, Societe de' Chirurgie de Paris.

"Personally I think your scheme to establish a Laboratory of the kind mentioned in your letter is an excellent one, and I will be glad to assist you in any way that I can in this work."

HON. F. H. MURRAY.

State Highway Engineer of South Carolina.

"I certainly agree with you that there is nothing that would so tend to develop American inventive genius as this would as the only thing that stands between the average inventor and success is financial aid."

A. W. MORRIS.

Inventor; Chief Engineer, The Harley Co.; Member Board of Governors of National Institute of Inventors; American Society of Mechanical Engineers, The Society of Automobile Engineers; American Institute of Metals, American Association for the Advancement of Science; Aerial League of America, American Electro-Chemical Society, Efficiency Society, Etc.

"The plan meets with my hearty approval. It seems to me that this idea is excellent and I trust that it can be worked out successfully."

HON. W. S. McCALLIE.

Georgia State Geologist; Member of National Research Council.

"I agree with you most heartily and am ready to assist you in whatsoever way I can."

HON. JACOB E. MEEKER.

Congressman from Missouri.

"There can be no doubt of the desirability of the end you seek to attain."

EUGENE C. MILES.

Editor "American Gas Engineering Journal."

"The necessity for the institution of a national laboratory is so self-evident, that it hardly seems that anyone should question either its importance or its advantages to the nation at large.

"I do not think that anything would promote the growth of this country in science and art like a national laboratory of invention and research."

ROBERT A. MEEKER.

Consulting Engineer; Member of National Research Council.

"The establishment of a laboratory to aid in the testing, development, and perfection of meritorious inventions has been examined by the scientific staff of this Bureau and it is the unanimous opinion that it possesses merit and promise."

H. F. MOORE.

Acting Commissioner, U. S. Bureau of Fisheries; Vice-President and U. S. delegate to Fifth International Fishery Congress, Rome; Member Academy of Natural Sciences, Philadelphia; Biological Society of Washington; American Fisheries Society; Societe' Internationale Pretectrice des Pecheurs de' Eponges; writer of note on biological and piscatory subjects.

"An institute of the character proposed would be a great national asset."

HON. BENJAMIN C. HILLIARD.

Congressman from Colorado.

"I believe that it is important to encourage those who are doing constructive work on important problems at the present time, and that there should be some means of sifting out inventions of importance and of assisting those who are making progress."

J. C. MERRIAM.

Professor of Paleontology, University of California; Member of National Research Council; Fellow American Association for the Advancement of Science; Geological Society of America; American Paleontological Society; Washington Academy of Sciences; American Philosophical Society; author of note on paleontological subjects.

"I am sure that any movement having for its purpose the assistance of inventive genius to put in operation their ideas, would be most fruitful of good results for the country."

HON. KEITH NEVILLE.

Governor of Nebraska.

"Your idea of establishing a laboratory in America to aid poor inventors, is a velop and perfect their inventions, is a splendid one. I have great confidence in the inventive ingenuity of America, and I believe that with proper encouragement many useful ideas could be developed."

HON. ROBERT L. OWEN.

United States Senator; Chairman of Committee on Banking and Currency.

"I think very favorably of your proposed plan for a national institute of inventors. Will be glad to promote such an object."

HON. MILES POINDEXTER.

United States Senator; Chairman of Committee on Indian Depredations.

"I highly approvve of the plans for financing laboratories in Arts of Science and poor inventors. Having taken out eight patents myself I had experience in this line in financing them trying to put them on the market, which have now got me patent poor."

RICHARD J. O'NEIL.

Inventor and Chief Boiler and Elevator Inspector of City and County of Denver.

"The Laboratory for Inventors, which you propose, would doubtless have great value, if it could be carried out in a satisfactory manner. There will be many cases where such an institution might receive important results, which would otherwise be lost."

EDWARD C. PICKERING.

Director, Harvard College Observatory; Member of National Research Council; Inventor of the Meridian Photometer, designed to measure the light of stars; awarded Henry Baker Medal for work on Astronomical Physics; Possessor of four gold medals for scientific work; Member National Academy of Sciences, as well as honorary member of societies at Mexico, Cherbourg, Liverpool, Toronto, Christiana, Upsala; Member Royal Astronomical Society; Astronomical Society of France; Italian Spectroscopic Society; Royal Institution Academy de Linces; Royal Society of London; Institute de' France; Imperial Academy, St. Petersburg, (President, 1906); Astronomical and Astrophysical Society of America; Fellow American Academy of Arts and Sciences; Founder and first President Appalachian Mountain Club; Member American Association Philosophical Society; Former President American Association for the Advancement of Science, and many other societies; author of note and authority on astronomical subjects.

"The objects outlined are very worthy and necessary.

"I heartily approve of any effort to help the poor inventor."

RALPH PETERS.

Federal Railroad Administrator, Long Island Railroad.

"The work which you have been carrying on would be of great benefit to the country, and if those who are making research with the idea of producing something for the benefit of mankind, and can do this work best through a national laboratory, I would approve such plan."

HON. ALBERT F. POLK.

Congressman from Delaware.

"I have felt for some time that something along this line should be done in our own state. I believe that such a laboratory as you suggest would be a spur and give an impetus such as to bring about most desirable results."

HON. PETER NORBECK.

Governor of South Dakota.

"The idea seems a very worthy one."

G. B. PEGRAM.

Acting Dean, Columbia University School of Mines, Engineering and Chemistry; Member of National Research Council; Fellow American Association for the Advancement of Science; American Physical Society.

"I have long appreciated the necessity for some instrumentality whereby inventions may be sifted and worthy inventors aided."

BYRON R. NEWTON.

Former Assistant Secretary of Treasury; U. S. Customs Service, Treasury Dept.; Collector of the Port of New York.

"I am of the opinion that if a laboratory can be established on a firm financial basis with an adequate personnel to handle the problems which are submitted to it, it would prove of great value to inventors lacking the financial resources to push their inventions. I think the plan in general is a good one."

JAMES F. NORRIS.

Bureau of Mines, Experiment Station; Chief in Charge of Offense, Chemical Research Professor of General Chemistry, Massachusetts Institute of Technology; Member of National Research Council; Former Secretary Society of Arts, Boston; Former President North Eastern Section American Chemical Society; Former President Chemical Teachers' Association of New England; Former President Technology Club; Fellow American Academy of Arts and Sciences; American Association for the Advancement of Sciences; author of note on organic chemistry and similar topics.

"Looked at from a broad point of view I suppose that everything possible should be done to encourage inventors in their efforts to develop practical devices and processes."

JOHN CLYDE OSWALD.

Editor of the "American Printer"; President of Oswald Publishing Co.; Director Graphic Arts Institute; President National Editorial Association; Brooklyn Institute of Arts and Sciences.

"The idea appeals to me very much and I hope something of that kind can be done."

HON. HENRY T. RAINEY.

Congressman from Illinois; Committee on Ways and Means.

"Such an institution would be a good thing in that it would certainly stimulate invention and would enable the inventor with a good idea but little or no means for developing it or to carry on experiments and to perfect his device."

WM. B. ROGERS, JR.

Directing Editor of "Motor Boat."

"I approve very much of the idea to found a National Laboratory for inventions and Research and development of inventions."

O. READMAN.

Inventor of Fire Grates.

"I think the idea a very good one and will be glad to lend my assistance in the furthering of such an institution."

HON. JOHN E. RAKER.

Congressman from California; Chairman of Committee on Woman Suffrage.

"A clean, able, and powerful organization, to assist the inventor to develop his idea, when it is reliably demonstrated worthy and to manufacture and market it independent of and withouut regard to the industrial or professional 'financier,' would without doubt prove a beneficent institution."

J. H. RUSBY.

Inventor of Tools.

"Naturally everything possible should be done to encourage inventors and inventions along the lines that would be usefuul to the country at the present time and also after the war."

DAVID B. RUSHMORE.

Engineer, Power and Mining Department, General Electric Company; Member of National Research Council; Fellow American Institute of Electrical Engineers (Vice-President, 1911-13; Member American Society of Mechanical Engineers, American Society of Civil Engineers; American Institute of Mining Engineers; New York Electrical Society; Societe Internationale des Electricien, France; Institution of Electrical Engineers, Great Britain; American Electro Chemical Society; Engineers Club, New York.

"I wish you all success in the establishment of an endowment from private sources."

ARTHUR L. RICE.

Treasurer, "Power Plant Engineering"; Consulting Engineer; Former Assistant Secretary, American Society of Mechanical Engineers; Former Editor, "The Engineer"; Former Managing Editor "Practical Engineer"; Consulting Engineer on Power Plant Construction and Operation; Member American Society Mechanical Engineers; American Institute of Electrical Engineers; National Society of Stationery Engineers; Western Society of Engineers.

"The more I think the matter over the more I feel that there is a need for some kind of an institution as you mention.

"No doubt there are many good things lost because the man with the idea has not sufficient money to put it to a test. On the other hand many men have some ideas which if passed upon by an authority would save them many a sleepless night and might direct an active mind into fertile fields of thought."

ALLEN ROGERS, Ph.D.

Technical Expert; Laboratory of Industrial Chemistry, Pratt Institute; Member of National Research Council.

"Personally I think that your idea of a laboratory, for men in research, such as you contemplate, would be a splendid thing and would certainly help a good many inventors who are handicapped by lack of funds."

OSCAR W. SJOGREN.

Acting Head of Department of Agricultural Engineering, the University of Nebraska.

"I think that invention and research go hand in hand with war preparedness; and if that is so I am in favor of the National Institute for such activities."

HON. J. M. C. SMITH.

Congressman from Michigan.

"In reply I would say that such an Institute or National Laboratory, if properly organized, might prove of great advantage to the inventive genius of this country."

D. SPENCE.

Chairman, Sub-Committee on Rubber and Allied Substances; Member National Research Council.

"I wish to express my very hearty approval of your plan. I am thoroughly convinced that economy and efficiency can be gained by such service as you propose, and I heartily approve the plan."

CARL E. SEASHORE.

Member National Research Council; inventor of Voice Tonoscope and other sound instruments; Dean, University of Iowa; Editor "Studies in Psychology"; Joint Editor "Journal of Educational Psychology; Consulting Editor "Psychological Review"; Fellow American Association for the Advancement of Science; Iowa Academy of Sciences; Member American Psychological Association (President, 1911); Western Philosophical Association (President, 1909); author of note on psychological subjects.

"I think the suggestion is an excellent one. Such an institution if managed in a broadminded way, should put America distinctly ahead of the rest of the world in the matter of invention. I approve of the idea most heartily."

"This is indeed a remarkable record, and I hope it will result in attracting financial support to permit it to become a center at which the thousands of ideas which are continually generated in this country may receive proper consideration and development. I can hardly conceive of any movement that would make for more rapid progress of civilization."

W. J. SPILLMAN.

Office of Farm Management, Department of Agriculture; Member National Research Council; Editor (1908-15); "American Naturalist"; Fellow American Association for the Advancement of Science; Member National Academy of Science; Society for the Promotion of Agricultural Science, Philosophical and Botanical Societies at Washington; American Society of Agronomy; American Farm Management Association; author of note on agricultural subjects.

"A National Laboratory for Invention and Research, which your organization proposes, will be, not only feasible and desirable, but will fill a long felt want.

"If an organization like the one you propose could be established upon a firm basis, it would be an instrument in the cause of civilization and progress."

HON. HALVOR STEENERSON.

Congressman from Minnesota.

"I cannot see anything but good in such an undertaking. There are worthy and poor inventors who are utterly unable to develop their ideas, many of which are of great value. There should be some clearing house of opportunity."

HON. GEORGE R. LUNN.

Member of Congress from New York; Committee on Military Affairs.

"I know of no reason why it should not be of immense value to the American people."

HON. REED SMOOT.

U. S. Senator; Chairman of Committee on Expenditures in the Interior Department.

"I think a laboratory for inventors such as you mention, with efficient management and conducted along a broad and philanthropic pólicy would undoubtedly be of great benefit for the mechanical progress of the country.

"There is no doubt on earth that a suitable laboratory, equipped for a great variety of work would be of enormous value to the technical progress of the United States."

J. RUSSELL SMITH.

Professor of Industry, Wharton School of Finance and Commerce, University of Pennsylvania; Member of National Research Council; Member American Academy of Political and Social Science; Philadelphia Geographical Association; Association of American Geography; American Association for the Advancement of Science; author of note on commercial and industrial progress.

"I would say that such an organization might do a great deal of good."

HON. HOKE SMITH.

U. S. Senator; Chairman of Committee on Education and Labor.

"I would state that such a laboratory as you suggest would no doubt be very valuable.

"If inventors would only take the trouble to find out what has already been done before attacking a problem it would save a great amount of time and energy on their part as well as those who must pass upon their proposition, and such an institution as you propose might provide a means whereby inventors could secure this information at the outset."

SAMUEL W. STRATTON.

Director of the Bureau of Standards; Member of National Research Council; Member International Commission on Weights and Measures; American Institute of Electrical Engineers; American Society of Mechanical Engineers; American Physical Society; American Philosophical Society; American Association for the Advancement of Science.

"Your plan appeals to us as a splendid thing in our country's hour of need and we hope it will be promptply and effectively organized."

H. J. STRAUB.

Manager "The Coal Trade Bulletin."

"I am in favor of the idea you suggested in regard to such a laboratory.

"I trust that this plan which you have suggested may be carried out and that such a laboratory of a very high grade may be established."

HON. E. H. SELLARDS, Ph.D.

State Geologist, Florida; Member of National Research Council; Member Geological and Paleontological Societies of America; American Association for the Advancement of Science; author of note on geological subjects.

"Service which such an institute can render to the individual inventor, and to the country at large has almost no limit."

H. H. WINDSOR.

Editor and Published of "Popular Mechanics."

"It is perfectly clear to me that following the war there must be thorough-going co-operation of science and industry if we are to meet German competition. How this can best be accomplished I am not certain in my own mind. It is very probable that the National Institute of Inventors will be helpful in bringing about this result."

CHARLES R. VANHISE.

President of University of Wisconsin; Member of the National Research Council; authority on Mineralogy; Member of National Conservation Commission; Chairman Board of Arbitration and Controversy between Eastern Railroads and Brotherhood of Locomotive Engineers (1912); Trustee Carnegie Foundation for the Advancement of Teaching; Member National Academy of Sciences; Washington Academy of Sciences; Scientific Society of Christiana; Royal Swedish Academy of Science, (President, 1907); Geological Society of America; Geological Society of London; American Philosophical Society; Wisconsin Academy of Sciences, Arts and Letters, (President, 1893-6); Boston Society of Natural History; American Association for the Advancement of Science; author of note and authority on natural resources of the United States, mineralogy, and industrial problems.

"I believe that a philanthropic laboratory intended to aid the poor inventor to develop and perfect his ideas in this country would be an excellent undertaking. It would be quite feasible and certainly a great public benefaction."

J. STIEGLITZ.

Professor of Chemistry, University of Chicago; Member of National Research Council; Fellow American Academy of Arts and Sciences; Washington Academy of Sciences; American Association for the Advancement of Science; Member National Academy of Sciences; American Chemical Society; Member of Council on Medicine and Pharmacy; American Medical Association.

"I believe that the greatest possible benefit could come and would come from the establishment of a Laboratory, such as you suggest in your letter, which has just reached me. As Chairman of the House Committee on Patents, I have had much experience with inventors and I am more and more inclined to the view that the United States has given less consideration to them than any other great country. I sincerely hope that you may be able to carry out your plans and to establish an institute, which will assist worthy inventors."

HON. CHARLES BENNETT SMITH.

Member of Congress from New York; Chairman of Committee on Patents; former Legislative Correspondent and Editor of "Buffalo Times"; Former Editor "Buffalo Inquirer" and "Buffalo Courier"; publisher "Niagara Falls Journal."

"I have long believed that there is a real need for such an institution and I sincerely hope you will succeed in bringing it about."

LEWIS M. TERMAN.

Professor of Education, Leland Stanford Junior University; Member of National Research Council.

"Your plea for the establishment of a National Laboratory for Invention and Research is worthy of ample support."

J. A. UDDEN.

Director of Bureau of Economic Geology and Technology; the University of Texas; Member of the National Research Council; Knighted by the King of Sweden (1911); Fellow Geological Society of America; American Association for the Advancement of Science; Corresponding Member Davenport Academy of Science, Iowa; Iowa Academy of Sciences; Member Texas and Illinois Academies of Sciences; Delegate to the Twelfth International Geological Congress, Toronto; author of note on geological subjects.

"Such a laboratory, if properly managed, would be of great benefit to the country."

STEPHEN TABER.

Professor of Geology, University of South Carolina; Member of National Research Council; State Geologist of South Carolina; Fellow Geological Society of America; Societe Geologique de France; American Institute Mining Engineers; Seismological Society of America; Geological Society of London; author of note on geological subjects, and an authority on earthquakes.

"There is no doubt in my mind that this would be a feasible thing."

JOHN E. TEEPLE, Ph.D.

Consulting Chemist; Chemical Engineer; Member of National Research Council; Member American Association for the Advancement of Science; American Chemical Society; American Society of Chemical Industry; American Electro-Chemical Society; Expert on Utilization of manufacturing waste products.

"Admirable. Get the biggest and the best men you can to back it. Best military inventions ought *not* to be patented. Congratulations on year's success."

DAVID TODD.

Inventor and astronomer of international note; Member Philosophical Society of Washington; American Association for the Advancement of Science; Astronomical and Astrophysical Society of America; Royal Society of Arts, London; Corresponding Member Societe Internationale des' Science Naturalles Mathematiques, Cherbourg; Societie, Geographica de Lima, Peru; Possessor of the Imperial Saki Cup from the Mikado of Japan; author of note on astronomical subjects.

"I wish to advise you that I am entirely in sympathy with this movement and believe that a great deal of good can be obtained from such work.

"We are not in a position to finance independent work for inventors but we constantly receive such applications. Therefore I feel that an institution of your kind will be very valuable."

E. R. WEIDLEIN, A.M.

Acting Director, Mellon Institute of Industrial Research and School of Specific Industries, University of Pittsburgh; Member of National Research Council.

"The plan seems sound."

H. GIDEON WELLS.

Director of Medical Research, University of Chicago; Member of National Research Council; Member Association of American Physicians; Cancer Research Society; American Medical Association; Chicago Pathological Society; American Association of Pathologists and Bacteriologists; American Association for the Advancement of Science; Association of American Bacteriologists; Society of Biological Chemistry; author of note and authority on medical subjects, connected with pathology.

"I should think that such a Laboratory might be of considerable assistance if properly managed."

GEORGE. W. VINAL.

Associate Physicist, Bureau of Standards; Member of National Research Council; Member American Physical Society; Washington Philosophical Society.

"It seems to me that an institution such as you suggest, with sufficient funds at its disposal and under the direction of men so noted for their integrity and ability as to inspire confidence in inventors, could not fail to prove of the utmost advantage to inventors, industries and to our country."

E. F. WATSON.

Inventor; Vice-President and Attorney of American Surety Company of New York.

"I believe that such a laboratory for invention and research would be of enormous benefit to us in the inevitable and colossal struggle for commercial supremacy which is bound to take place at the close of this war. I hope this proposition will come to early fruition."

H. J. WHEELER, Ph.D., Sc.D.

Manager of The American Agricultural Chemical Co.; Member of the National Research Council; Ex-President Association of Official Agricultural Chemists, U. S.; Member American Chemical Society; American Association for the Advancement of Science; American Association for the Promotion of Agricultural Science; American Geographical Society; Former President American Society of Agronomy; author of note and authority on scientific and agricultural subjects.

"I think that your idea that there ought to be some philanthropic Laboratory in America to aid the poor inventor develop and perfect his ideas is a very good one, and I have no doubt that it would prove of great practical benefit if once put into operation."

HON. JOHN SHARP WILLIAMS.

U. S. Senator; Chairman of Joint Committee on the Library.

"The cost of it will be justified by one great discovery once a decade. It is a great blessing to humanity that some men are willing to devote their energies and resources along lines of research work. Surely more can be accomplished if financial assistance is given to them."

HON. GEORGE M. YOUNG.

Congressman from North Dakota; Committee on Agricuulture.

"I will say that it is in my opinion a sound social and national policy to encourage invention and research in the interest alike of the public and the inventor. Such an Institute administered wisely might do much to reduce duplication of effort and accelerate accomplishment. It ought not to contribute to monopoly. Some provision whereby discoveries fostered by its aid should contribute in turn to the public good should be in its foundation principles. The spirit of pure science—so called—should dominate its policy."

CHARLES A. KOFOID.

Professor of Zoology, University of California; Member of National Research Council; received honorable mention Paris Exposition 1900 for his research work; Gold Medal St. Louis Exposition; Inventor of Planthonet; author of international note on biological and zoological subjects; Fellow American Association for the Advancement of Science; Member American Society of Naturalists; American Microscopic Society; Association of American Anatomists; American Zoological Society.

"I like very much the plan of an inventors' laboratory designed to aid the poor inventor in the development of his ideas."

PAUL R. WOODRUFF.

Editor of "Telephone Engineer."

"I have no doubt that much good might come from such a laboratory if it were properly endowed under proper guidance and if it was run with the sole purpose of aiding both the industries and the individuals with ideas. It is a pretty delicate business to manage inventions so that the inventor will get the financial benefit due him. If that can be done, then I should favor such a laboratory."

JOHN ZELENY.

Professor Physics, Sloane Laboratory, Yale University; Member of National Research Council; Fellow, American Association for the Advancement of Science; Member American Physical Society; American Philosophical Society; Washington Academy of Science, and author of note on physical subjects.

"I believe the plan is an excellent one in that it will serve to pick out the wheat from the chaff and expedite the development of inventions of value."

L. E. BARRINGER.

Engineer of Insulation, General Electric Co.; Member of National Research Council.

"I have had the matter under consideration, and notwithstanding the many difficulties which the management of such an institution would involve, I wish to give the undertaking my hearty approval. Any research laboratory of whatever nature cannot help but render great service to the nation and to civilization."

ANTHONY ZELENY.

Professor of Physics, the University of Minnesota; inventor of Multiplex; Fellow American Association for the Advancement of Science, (Vice-President, 1914); Member American Physical Society; author of note on Physics and Electrical Subjects.

"I think it has much possibility of grand success. I am surely hoping that your plans may work out well."

"Such an organization ought to begin at once to be of value in correlating and encouraging American inventive thought. We need to get the benefit of some central organization composed of really able men whose ideas can be brought into use to guide the activities of many individuals who are willing enough to serve but whose general judgment is not good. We ought to aim not so much directly at making this country a leader in commerce, as at making our activities such that this country may take its place among the leaders in constructive thinking."

BURTON E. LIVINGSTON.

Director, Laboratory of Plant Physiology, the Johns Hopkins University; Member Botanical Society of America; American Society of Naturalists; Fellow American Association for the Advancement of Science; author of note on plant physiology.

"In my opinion it would be of unlimited benefit to the inventors seeking to develop their ideas into practical and commercial lines, and also of benefit to the U. S. Government, and various industrial interests which such inventions would represent.

"Primarily, in my opinion, due to the fact that if such laboratory was duly equipped and the various departments necessary were established to develop certain lines of invention were conducted on a strictly business principle and without fear or favor, except as to the possible merits of any new invention, then I believe such laboratory is most essential and beneficial to the general welfare of the industrial world.

"In my opinion an institution of the description mentioned would require the best commercial system of management that could be inaugurated, and should be run on a strictly business principle. In other words if an invention were brought to the attention of the institute, and the inventor was unable to carry forward the development of the same, and the institute undertook to determine the value of such invention, and the same proved to be of commercial value, in that event the cost of the experiments, including overhead expenses, etc., should be charged against such work, and the inventor should pay for the same, and in addition thereto a certain percentage of the profits of whatever nature which are the result of the disposal of said invention should be given to the institute, and by this plan of procedure, wherein certain inventions might prove to be of no value, and yet considerable expense had been the result in the nedeavor to ascertain the value of such ideas, devices, or inventions, we might secure certain profits on the successful outcome of any inventions to overcome the loss sustained otherwise and in the course of time create a surplus fund for the further progress of research and extension of the project.

"There is no question in my mind, but what we need an institution of this character, and before definite plans are decided upon, great care should be exercised in the drawing up of the constitution and laws governing such funds subscribed by various parties, so that they will be so safeguarded and protected that the Institute will be a success from every point of view."

L. A. SUBERS.

President of the National Institute of Inventors; President Subers Fabric and Tire Co.; Member Cleveland Chamber of Commerce; Rubber Club of America; The American University Club of England.